January
1931

AMERICAN GAS ASSOCIATION MONTHLY

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AMERICAN GAS ASSOCIATION · LIGHT · HEAT · POWER · INCORPORATED · 1919

AMERICAN GAS ASSOCIATION MONTHLY

Allyn B. Tunis, Editor

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Chas. W. Hunter

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OUR OWN WHO'S WHO

CHARLES W. HUNTER, vice-president of the United Engineers & Constructors, Inc., Philadelphia, Pa., was elected to that office on the formation of the company in the spring of 1928.

Since his graduation from Cornell University in 1905, Mr. Hunter has been engaged in engineering and construction work in the gas field. For many years he was gas engineer of the Stone & Webster Engineering Corporation, building several plants which had unusual records of efficiency. During the war, he organized the Toluol Section, United States Army Ordnance Department, at Washington, arranging for the building of many plants for the recovery of toluol from city gas and their operation by public utilities. In 1918, he was active in building a large explosive plant for the government and later, of several other industrial and chemical plants. In 1924, Mr. Hunter was made assistant to the president of the United Gas Improvement Contracting Company, and a year later vice-president of the same concern. In 1928, this company was merged with three others to form the United Engineers & Constructors, Inc. Mr. Hunter is a director of the United Engineers & Constructors, Inc., Dwight P. Robinson & Company, Day & Zimmermann Engineering & Construction Company, and the Public Service Production Company.

AMERICAN
GAS ASSOCIATION
MONTHLY

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Further Progress of Gas Industry Forecast by Leaders

LEADERS of the gas industry in the United States and Canada see indications that their business will continue its march of progress in 1931. They look for no abatement in output and sales in view of the fact that the 1930 record almost equalled that of 1929 despite the general business uncertainty of the year just closed.

Actual figures compiled by the Statistical Department of the American Gas Association show that revenues from the distribution of manufactured and natural gas during the first ten months of 1930, based on reports submitted by almost 90 per cent of the gas distributing companies, aggregated $519,691,351.

Manufactured gas companies reported revenues of $314,548,799 for the ten-month period, representing a slight gain over the $313,416,157 reported by the same concerns for the corresponding period of 1929. Revenue of natural gas companies for the same period amounted to $205,142,552, a decline of 1.5 per cent from the same months of 1929.

Carrying out the program of extensions and betterments to plants, during 1930, both manufactured and natural gas utilities expended in construction $408,000,000.

Both in the factory and in the home the indispensability of gas service for practically all heating purposes has been fully demonstrated and its further development in 1931 is regarded as a certainty.

Many factors have contributed to the welfare of the gas business. A large number of these have been carried forward by the American Gas Association, and not the least was the increased activity in research

1930 Sees Expansion of Area Served by Gas

By CLIFFORD E. PAIGE
President, American Gas Association

GAS is used in this country by approximately sixteen million customers. During 1930, the aggregate volume sold was nearly two and one half trillion cubic feet. Revenues from the sale of gas in the first 10 months of 1930 are practically the same as for the corresponding period of 1929, although the output of gas shows some reduction.

Most of the gas companies in the country have maintained their schedules of construction, and at President Hoover's request, have, as far as possible, anticipated them. The result is that public utilities and the gas industry particularly have been able to employ even more people than was the case last year, thus making a substantial contribution to the stabilization of the business.

C. E. Paige

During the year, the territory served by the gas industry has extended materially. Moreover, the useful purposes for which gas may be adapted for fuel have increased considerably.

The increased activity in research at the Cleveland Laboratory of the American Gas Association and the valuable cooperation of various technical schools with which the industry is affiliated, assure a continually expanding field for this product.

work at the A. G. A. Testing Laboratory, at Cleveland, Ohio, and at several of the prominent universities and technical schools in many sections of the country, appliance and equipment manufacturers cooperating. These research studies have brought about a knowledge of the potentialities of gas service which is playing an important part in the expansion of the business.

Scores of American Gas Association committees, composed of members who are prominent in their respective fields of the industry, have studied and solved various problems, all to the benefit of the industry.

Accomplishments of the Association during 1930 have been varied. The following are among the outstanding achievements:

Creation of "A Course in Industrial Gas Salesmanship," by the Industrial Section.

Completion of a field survey of domestic and industrial sales management practices which furnished the basis of the Course of Study in Sales Management Practice, now offered and sponsored by the Commercial Section.

Continuation of the educational course for home service directors at the Testing Laboratory, in Cleveland, and Columbia University, New York.

Participation in the World Engineering Congress in Japan.

Inauguration of a cooperative advertising campaign to sell coke, by the Publicity and Advertising Section.

Study of methods of natural gas production and distribution looking toward its conservation, conducted by the Natural Gas Department following a resolution adopted at the Association's Twelfth Annual Convention.

Endowment of two fellowships in natural gas research, one at the University of West Virginia and the other at Oklahoma University.

Participation in the World Power Conference at Berlin, Germany.

Continued support of the Department of Gas Engineering at Johns Hopkins University, Baltimore, Md.

Introduction of the A. G. A. Household Information Service by the Publicity and Advertising Section.

Introduction of the A. G. A. Employee-Customer Relations Course.

Burning of $15,000 mortgage, removing the last indebtedness on the Testing Laboratory.

Announcement of the offer of the Samuel Insull Award for Distinguished Public Service, to be presented each year to the member companies which make the greatest advancement.

Establishment of the A. G. A. Testing Station at Los Angeles, Calif.

New record set for attendance at Annual Convention, which was marked by largest display of appliances and equipments yet held.

Inauguration of a national survey covering cooperative sales with merchants and craftsmen.

Continuation of the five-year program of the American Gas Association and approval of plan looking toward adoption of further program covering a given number of future years.

Introduction of a course in the the manufacture, distribution and utilization of gas under the direction of the University Extension Division of Rutgers University.

Inauguration of an outdoor advertising poster service for use of local gas companies, by the Publicity and Advertising Section.

Completion of Bibliography of Public Utility Rates from 1815 to 1930.

Announcement of A. G. A. participation in Century of Progress Exposition, at Chicago, in 1933.

Gas to Play Big Part in 1931 Readjustment

By ALEXANDER FORWARD
Managing Director, American Gas Association

Alexander Forward

ALTHOUGH the gas industry has suffered less than almost any other business in America from the uncertainties and readjustments of 1930, we shall have full part in the reconstruction of 1931.

We can take not more than a moment to be gratified that the gas industry in the past year equalled its business record of 1929, although that fact has deep significance. Indeed it is now all the more important that we, our resources of knowledge and equipment and spirit unimpaired and our essentiality fully demonstrated, shall have our full part in the inevitable general recovery just ahead and in the solution of new problems.

There are readjustments ahead, and, as always, the gas industry's strength is in the ability to readjust.

The lessons of the year have not been missed; the Association has been thinking ahead; we are organized, as never before, to meet what is coming.

Now, if ever, is the time to keep one's feet on the ground and one's eyes to the future, for that future belongs to the individual who has the will and the ability and the courage to correctly appraise the terrain around the next corner.

Zoo Installs Gas Heat

No monkeying with monkeys down in Texas zoos. They won't stand for it. Smart they are; know enough to demand a natural gas installation in place of their old wood-burning stove. The long-tailed denizens of Forest Park Zoo, Fort Worth, put it up to their keeper, pointing out that because of the great variation in temperature during wood-burning days a number of them had contracted pneumonia and died. They wanted a heat which could keep their houses at any desired temperature regardless of outside weather.

Recently, zoo authorities had the Fort Worth Gas Company install gas-steam radiators to keep the monkey houses at an even and healthful temperature. These radiators are so arranged that the simians cannot meddle with their heat supply.

In addition to the monkey houses, the elephant's home is also gas warmed, by an open-space heater which is protected from the elephant's inquisitive trunk by a screenwork of heavy iron. The healthfulness of gas heat for homes is manifest in the above instances, as the monkeys are in perfect health, and the elephant has grown to such an extent that it has been necessary to raise the roof of his dwelling eight feet.

Esther Rockey

Home Service in the Gay 'Nineties*

By ESTHER ROCKEY
The Dayton Power & Light Co.

THE term "Home Service" conjures pictures of gay delightful kitchens, smartly uniformed attendants decorating a lemon pie with a meringue in the latest design before a group of eager, interested homemakers. Far different was the "Home Service Department" established in 1900, at Dayton, Ohio, by George Light, then superintendent of the Dayton Gas Company—one of the first departments of its type in the Columbia Gas and Electric Company's system.

By 1900, electricity was fast supplanting gas for lighting purposes. Gas engineers were speedily developing new uses for their product among which was cooking. Gas ranges went on sale in Dayton, but it wasn't so easy to persuade housewives that they were safe and efficient. Accordingly, a kitchen was set up for experiment—but what a kitchen! No green, yellow or mauve curtains fluttered at the windows. There were no windows, and instead of attractive, inlaid linoleums, gravel or cobblestones furnished the floor covering, for the streets housed those first home service kitchens.

A ditch was run down a thoroughfare, the main installed, and a gas range, resting on floor boarding laid across the ditch, was connected to the pipe line. No dainty misses in white uniforms presided over those outdoor kitchens. Pipe linemen in nondescript blue jeans, red flannel shirts with sleeves rolled to the elbows, waited to demonstrate to the first brave soul who could be prevailed upon to come out of the house, skillet and family meal in hand. Those attendants weren't there to tell her the blessings gas had bestowed upon humanity in general.

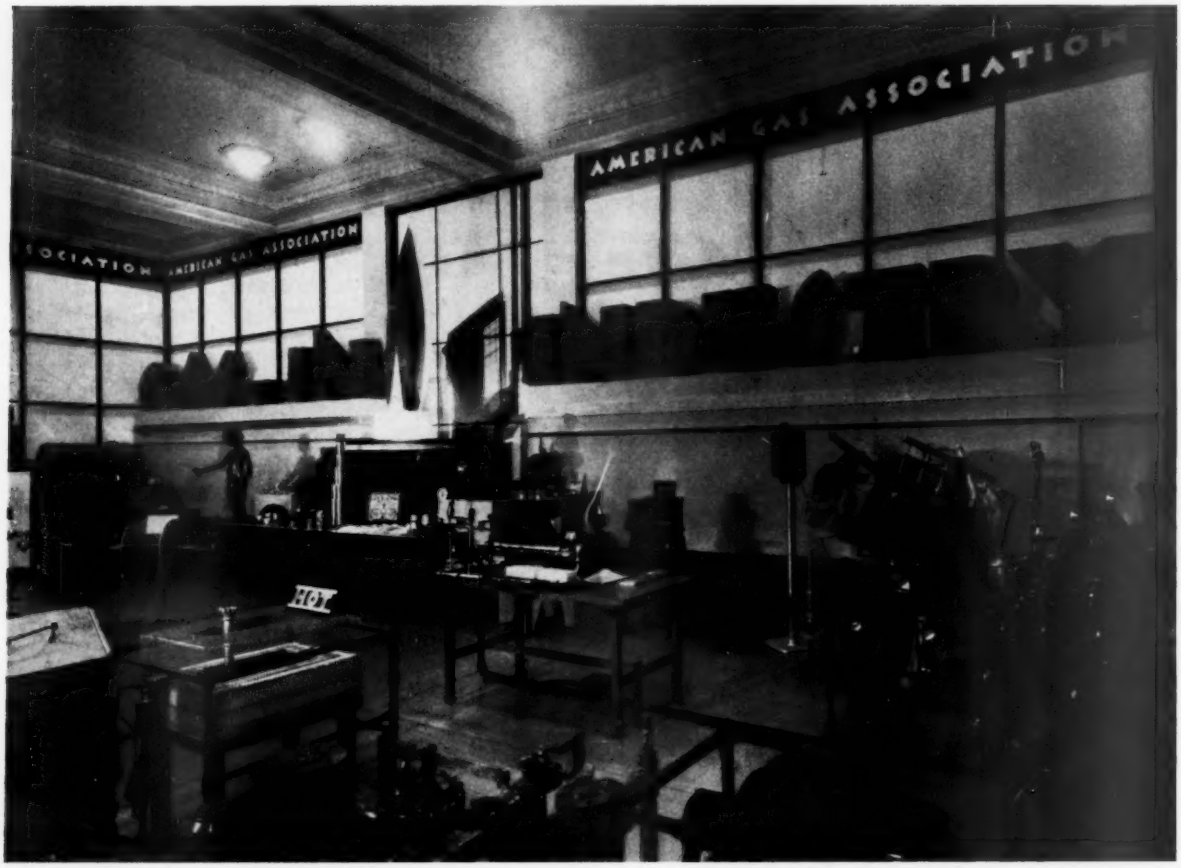
No indeed! Cooking was cooking, gas had not come into her home, perhaps, and the order that had gone out was, "Get the consumer!" When the first meal was cooked on the stove, it wasn't necessary for the company to send out engraved announcements of its demonstrations. As the odor of coffee, fried beefsteak and onions floated down the street, other housewives sallied forth with pots, pans and food to take part in the experiment, and the problem of installing gas for cooking in the homes of Dayton was soon solved.

Like the Model T Ford, the first gas ranges were distinguished chiefly for their ugliness. They could not compare with the colorful, thermostatically controlled stoves that adorn our kitchens today, but they must have been marvels of beauty to the woman who saw in them an escape from the hot cook stove or the hazards of filling the gasoline stove.

The terms on which the first ranges were placed in the homes were particularly easy—the service line was brought in to the kitchen and the meter set free of charge. The stove was installed at a charge of 1 cent a day with an initial payment of $1 for the first three months' rental. In four years, 4,000 gas stoves had been installed in Dayton. The gas company had accomplished its purpose.

When the Street was the Kitchen

* Published by courtesy of "Hail Columbia!"



Gas Exhibit at Power Show held in Grand Central Palace, New York

A. G. A. Again Receives Power Show Certificate

By J. M. CONNOLLY,
The Brooklyn Union Gas Company

THE American Gas Association again captured a certificate of merit for its splendid exhibit at the ninth National Exposition of Power and Mechanical Engineering, which took place in the Grand Central Palace, New York, last month.

This display was under the joint sponsorship of the Industrial Section, American Gas Association, and the Consolidated Gas Company of New York, The Brooklyn Union Gas Company, Brooklyn Borough Gas Company and the New York and Richmond Gas Company.

Latest developments in industrial appliances, as well as modern means of space heating, water heating and water cooling for factory and office use, were shown at the A. G. A. booth. In the past, the display has included only gas appliances used in home and industry. The 1930 exhibit featured the finished products of more than 30 industries which use gas in their production. This innovation attracted considerable attention and drew favorable comments from hundreds of visitors.

Visitors were escorted through the booth by representatives of the industrial divisions of the above companies. These men, together with the representatives of manufacturers, explained the operations of the appliances and also told how gas was used in the manufacture of the finished products on display.

The products exhibited in connection with the show were manufactured by concerns located in the territory served by The Brooklyn Union Gas Company. These concerns follow:

Continental Baking Co., Inc., Janome Rayon Corp., Sanka Coffee Corp., Sterling Die Casting Co., Inc., Eberhardt Faber Pencil Co., Pittsburgh White Metal Co., Euclid Candy Co., Valentine & Co., General Baking Co., Ward Baking Co., Armour

& Co., Pompeian Bronze Co., Lily-Tulip Cup Co., A. Douglas Nash Corp., Pioneer Instrument Co., Inc., Maxwell House Products Co., Inc., Quaker Maid Corp., L'Atelier, California Packing Co., H. C. Bohack Co., Williamson Candy Co., J. H. Werbelofsky's Son, Cameron Machine Co., International Vitamine Co., Dugan Bros. Inc., Beech-Nut Packing Co., Mason, Au & Magenheimer Confectionery Co., Inc., L. J. Baum, Marko Storage Battery Corp., Old Town Ribbon & Carbon Co., Iodex and Newport Optical Co.

The following gas equipment was on display:

Rotary carbonizing furnace, manufactured by the American Gas Furnace Company; the Kemp air-gas mixing machine, used in connection with the Kemp immersion system of heating low melting point metals and solutions, manufactured by the C. M. Kemp Mfg. Company; the Selas Company's air-gas mixing machines in connection with internally heated soldering irons; gas-fired boiler and boiler water feeding pump, manufactured by the Mears-Kane-Ofeldt Company; the Ensign-Reynolds Company gas compressor supplying gas for a group of special burners, and also for supplying gas to internally heated solution tanks; the unit heater, a self-contained, gas-fired air heater manufactured by the General Gas Light Company; a water cooler and an optical lens chiller, manufactured by Electrolux Refrigerator Sales, Inc.; a nozzle mixing blast burner with temperature control made by the Partlow Corp.; the Carrier Weather Maker for supplying conditioned air for space heating and industrial processes, manufactured by the Carrier Lyle Corp.

An application of large volume water heating by the Bryant Heater & Mfg. Company, in connection with the Patterson-Kelley Company indirectly heated hot water storage tank; Ideal boiler, manufactured by the American Gas Products Corp.; the Surface Combustion Company gas-fired forge furnace, with temperature control supplied by the Wilson-Maeulen Company, Inc.; the gas-fired boiler with boiler feed water pump, manufactured by the Mears-Kane-Ofeldt Company.

The following committee of the American Gas Association was in charge:

C. W. Berghorn, American Gas Association; C. Y. McGown, Consolidated Gas Company; C. E. Muehlberg, Consolidated Gas Company; R. H. Staniford, Jr., The Brooklyn Union Gas Company; A. L. Palmer, The Brooklyn Union Gas Company; O. E. Barene, the Brooklyn Borough Gas Company; and J. A. Reynolds, New York & Richmond Gas Company.

R. M. Martin of the Consolidated Gas Company, was in charge of the preparation of the exhibit.

Earlier in the fall, the American Gas Association, in conjunction with The Peoples Gas Light & Coke Co., Public Service Company of Northern Illinois, Northern Indiana Public Service Company and the Western United Gas and Electric Company, also sponsored an exhibit at the National Metal Exposition, which was held in Chicago. Eleven manufacturers of gas burning equipment were among the exhibitors and had an extensive layout of furnaces and burners for the use of gas.

Surface Combustion Company, Toledo, Ohio, showed two standard sized oven furnaces, a pot hardening furnace, an air heater, a recuperator, and a display furnace with the various types of burners manufactured by that company.

Eclipse Fuel Engineering Company, Rockford, Illinois, exhibited a small high pressure boiler, a combustion chamber, for a 150 h.p. boiler, a cyanide furnace, two standard oven furnaces, burner equipment for a large heat treating furnace, and smaller equipment and burners.

American Gas Furnace Company, Elizabeth, New Jersey, showed a large oven furnace, a rotary carburizer, a reciprocating hearth heating machine, a cyanide hardening furnace, a rotary metal melter, a number of small standard furnaces, and a burner display rack showing a number of different types of small burners.

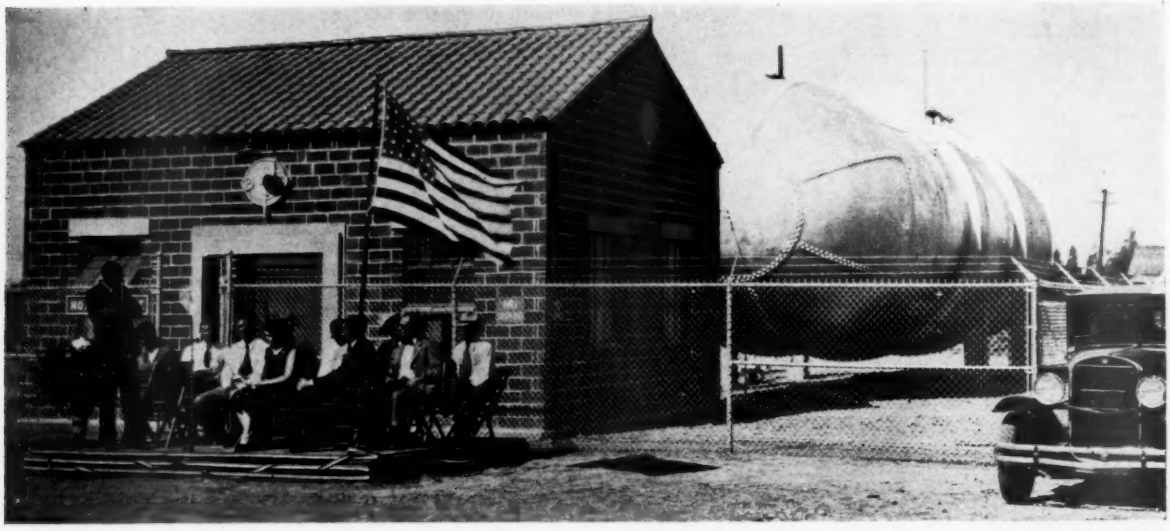
Paul Maehler Company, Chicago, Illinois, concentrated on a display of air heaters. A direct fired air heater for tempering, drawing, mold and core baking, together with interior views of the heater with an electrical control cabinet, were shown in this booth.

Young Brothers Company, Detroit, Michigan, exhibited an oven showing three different methods of heat application with gas. A smaller gas heated oven and automatic controls were also demonstrated by this firm.

Gehnrich Oven Company, Long Island City, New York, constructed a continuous oven for dipping and bak-

(Continued on page 46)

Gas Exhibit at National Metal Exposition, Chicago



Typical view of one of the air butane gas plants now dotting the Pacific Coast as a result of the development program of the Natural Gas Properties, Inc.

Air-Butane Development On Pacific Coast

R. E. Aitcherson

By R. E. AITCHERSON,
Vice-President, Natural Gas Properties, Inc.

THE development of air-butane gas plants throughout the Pacific Coast is one of the outstanding events of the year in the gas utility field, particularly in that it has taken place during a period when most other business enterprises were retrenching, or at best merely holding their own.

Yet, the pioneer work of bringing gas service to numerous small communities in the Pacific Coast states has met with continued success by Natural Gas Properties, Inc., and its subsidiary companies—Natural Gas Corporation of California, Natural Gas Corporation of Oregon and Natural Gas Corporation of Washington.

With the entire natural gas organization less than a year old, the work undertaken by these companies at the present time represents investments of approximately $3,000,000 in the communities to be served, all of which is a product of the splendid program of expansion and development planned by Pacific Public Service, parent company and responsible for the development of butane gas in this territory.

Already plants and distribution systems have been completed and service inaugurated in such California communities as Brawley, Calexico, Vacaville, Fairfield, Suisun, Rio Vista and Isleton, with numerous other plants now underway and dates set for completion early in the year.

In every instance this service has met with whole-hearted approval on the part of all consumers, both domestic and commercial, and is a great boon to housewives in the smaller communities, providing both an inexpensive and a steady, even heat for all household purposes.

The appointment of A. E. Strong to organize operations of the Natural Gas Corporation of Oregon also marks the entrance of these two companies into the active operating field.

Work has been underway for the past several months on plants and distribution systems in such growing communities as Klamath Falls, La Grande, Bend, Coquille, and Cottage Grove in Oregon; Shelton, Camas and Port Townsend in Washington, with numerous others scheduled for the immediate future.

With the completion of work in these first communities, the actual operation of service is ready to be put underway, and this will be under the direct charge of Mr. Strong.

Mr. Strong has been with the Coast Counties Gas and Electric Company for several years and, since the reorganization of that company, about two years ago, has been its general superintendent.

Headquarters of Mr. Strong will be at Portland, Oregon, which is centrally located in regard to the many plants under construction throughout both Washington and Oregon.

Franchises have been obtained and applied for in approximately 150 communities in these territories and it is the plan of Natural Gas Corporation of California, Natural Gas Corpora-

(Continued on page 42)

Newspaper Advertising Increases Gas Sales

TO the material assistance obtained from the newspaper advertising campaign conducted cooperatively by gas companies in the New England states under the auspices of the New England Gas Association, in the opinion of company officials, is largely attributable the fact that, while gas sales for the country at large have been stationary, the sales of the New England companies have shown an increase throughout the year of 1930. The newspaper advertising campaign, which was supplemented with radio and direct mail advertising, now is being used as a pattern in other sections of the country.

The New England gas campaign has been conducted over a course of three years and another cooperative, three-year drive is now being considered by the association. Before undertaking this, however, the association is making an extensive survey of the gas business in the New England sector for the purpose of securing information upon which any new campaign may be based. This is the first time that a regional gas association has undertaken such a study of public opinion as a basis for advertising.

The survey now under way will cover the New England territory and will be directed through three regional areas, it is explained by the Connecticut Committee on Public Service Information. Several thousand customers of gas companies will be interviewed to obtain a first hand picture of customer opinion. While the principal objective of the survey will be to collect information helpful in charting the association's program for the next three years, other data will be obtained which will enable the association to evaluate the character and appeal of its present advertising and merchandising and to check up on the exact results to date.

THE GAS INDUSTRY of NEW ENGLAND . . . steps ahead

Makes decided gains in the face of economic conditions that during the past year have meant a falling off in the sales volume of many other industries.

There has been a marked increase in manufactured gas sales in New England during the first nine months of this year. For example, the number of gas house heating installations was 24.4% greater than last year and gas sold for this purpose was 37% more. During this period the sale of gas for cooking, water heating, refrigeration and other domestic purposes increased more than 3½%.

These results are indeed gratifying since they indicate that the people of New England are evidencing their appreciation of the vision of the gas industry in keeping abreast of the times—devising equipment by which the modern adaptation of this age-old fuel may be transformed, instantly, into a universal household helper. "What amazing facts I learned about gas!" said Floyd Gibbons recently. "I discovered that it is doing a lot more for this race of ours than simply frying our eggs and broiling our steaks. It astonished me to learn that there is hardly an activity we civilized humans indulge in—hardly an item among the manufactured things that make life worth living in this present day—that we could have without gas."

In this country the stupendous amount of five billions of dollars is invested in the gas industry. One hundred and twenty-five thousand workers are engaged in giving service to eighty million people who use gas for cooking, hot water and heating. And in the industrial arts, almost every factory employs gas in some manner in its manufacturing processes. While the use of gas is nation-wide, New England is one of its largest users and there are in the New England states alone 12,120 miles of gas mains—enough to half encircle the earth.

One of the most important of the more recent developments in the application of "the better fuel" to public welfare is the silent gas refrigerator—economically operated by a little gas flame and a trickle of water. The new gas fireplaces and radiators in modern designs supply quick heat anywhere. A gas garage heater makes cars start instantly on cold mornings and saves repair bills. The gas incinerator banishes all the evils of the old garbage can. The housewife who has a gas laundry dryer in her home can laugh at stormy washdays.

And so, if space permitted, we could go on and on about the devices which the gas industry has perfected as aids to better living. The handsome, modern gas ranges which cook automatically, are the quickest and most efficient of all made. Gas water heaters, of the most up-to-date type, now supply an abundance of hot water instantly and make the daily bath an American institution.

The gas industry will continue to "step ahead" in the future as it has in the past. Gas employees are attending training schools where, under able instructors, they are daily learning the art of serving you better. The gas industry is highly organized in the field of research, investigation and analysis, always with the object of gaining a more thorough understanding of its products and their adaptation to the needs of mankind. In the beauty, mechanical perfection and the utility of the gas appliances offered for your service, you are promised up-to-the-minute progress. We thank you for the appreciation you have shown of our efforts, as evidenced by the marked increase in sales.

GAS THE better FUEL

THE GAS INDUSTRY OF NEW ENGLAND
OF WHICH YOUR OWN GAS COMPANY IS A PART

House Heating Campaign in Cincinnati

By E. R. ROTHERT
Manager, Gas Commercial Department
The Union Gas & Electric Company

HOUSE HEATING is more or less of an engineering problem, and to successfully put over a sales campaign in this field, specially trained salesmen devoting their entire time to this one service, must be intensively employed. These salesmen should be alert and above the average, for they are selling gas in competition with cheaper fuels and must be able to present the intangibles that are inherent with gas. Hit or miss selling of an assorted list of appliances including gas furnaces, has gone by the board, specialization having taken its place. The success of the new method is attested to by the results obtained in Cincinnati.

The building of the house heating load with gas, was started in Cincinnati in 1910 and an average of 3,000 customers per year were obtained until the capacity of the distributing lines was completely sold. This campaign was then discontinued until such time as more capacity and more gas were available, and in quantities to justify another campaign. From 1924 to date the increase in line capacity has been at a rate much in advance of the present maximum demand of the territory served.

In 1927 the company felt warranted in resuming the house heating campaign. At that time there were about 30 men in the field selling electric appliances, such as percolators, toasters, irons, etc., and the gas house heating line was simply passed over to these men, through the electrical appliance department, and remained there for three years. During that period new customers for gas house heating averaged 300 per year.

In March of this year the gas house heating sales were turned over to the gas commercial department and under my direct supervision. At that time I had only three men familiar with sales engineering in connection with house heating, so I drafted 25 inspector salesmen who had been selling small gas appliances, and gave them an intensive course of training in house heating. These men were also to sell water heaters and gas ranges.

The population of Cincinnati was now around the half-million mark and for close control the twenty-one billing districts were divided into four groups. Each of these groups is in charge of a team captain who is a sales engineer and an expert in house heating, and under him are from four to five men. Fixed quotas of several classes were established for each district and team.

First, a house-to-house canvass was made and a record kept of every home and of every gas appliance used in that home. This constituted a market survey and analysis and indicated the potential possibilities for sales of various gas appliances and the most favorable locations. It also gave a record of the total number of each gas appliance already on the lines which was used as a basis for a progressive record of results obtained during the campaign under way. All householders called upon and found using fuel other than gas were considered as potential prospects and their cards were put in a visible index and returned to the proper salesmen at the future dates, which the salesmen themselves had indicated for followups.

The company maintains a gas appliance testing laboratory and has tested out various makes of gas conversion burners, furnaces, water heaters, etc., and as a result of this and knowledge obtained through experience, the greatest portion of the sales activities is concentrated on the conversion unit known as the "Janitrol." The greater portion of the advertising is also directed toward this particular unit, with the general educational theme of "Heat With Gas."

Cover on direct mail piece

The following media have been employed to carry these sales messages: Newspapers, direct mail, automobile tire covers, painted and illuminated billboards, and a monthly customer publication, "The Servant In The House." Each salesman is equipped with complete cost data pertaining to the various fuels and a folder in which are bound more than one hundred photostatic copies of letters from satisfied customers using gas for heating their homes. Field men claim this latter to be of the greatest aid to them. These letters were in reply to a form letter sent to customers asking them for comments on the results obtained with gas heating. Permission was asked of the writers to photograph their houses and use them in advertising. The letters in the folders are classified as to districts so that the salesmen can show houses in the immediate neighborhood of any prospect they may be calling on.

For a fall and winter campaign we are offering to install the Janitrol conversion unit in the prospect's home for a small down payment after which he is to use the machine during the most of the winter. If, for any reason he is dissatisfied with the burner and notifies the company on or before February 1, the burner will be removed and his money refunded. It is estimated that only a few of the

Type of newspaper advertising used

burners sold under this "money back" plan will be taken out.

Another plan which is used in connection with the above and which has proved to be a good business producer, is a free furnace or boiler cleaning for the customer. This is a very thorough job and is "farmed out" to a company that makes a specialty of cleaning central heating plants.

The immense success of these sales and organization plans is directly reflected by the results obtained. From March 1, to November 1, 1930, heating sales are 225% greater than for the same period last year, and this in spite of the fact that business conditions this year are no where comparable with those of the boom period of last year.

Salesmen are paid a salary and commission, the latter on an upward sliding scale, as well as a bonus at the end of the year if he sells more than a certain fixed quantity. The more units a man sells the greater the commission per unit. For instance, if he sells one unit a month his commission is so much, but if he sells 20 or more his commission per unit is four times as large. This sliding scale is worked out for each unit from one up, and the entire schedule of compensation operates to obtain the maximum effort from the salesman and has been extended to include water heaters, automatic storage water heaters and insulated oven gas ranges. The team captains are paid salaries commensurate with their duties which are to give any technical or other aid necessary in closing sales.

Even the salesmen's approach has been studied and carefully planned. He first introduces himself as a representative of the Union Gas & Electric Company, and asks the housewife if she is entirely satisfied with her gas range, water heater, etc., and whether their appliances are giving the best results possible. This usually gives him entree to the home where he inspects the various appliances and demonstrates how to adjust and clean the burners to get a blue flame with more efficient results. During this time he talks of the new automatic gas house heating units, automatic storage water heaters with safety pilots, and soon has her in a receptive frame of mind. Thus the preliminary stages of a sale are disposed of in a plainless and most effective manner.

The records compiled this year will serve as a high power "ammunition"

Form A 987½–Wmn. DIST. RES. BUS. DATE

TENANT / OWNER — 1 Family, 2 or 3 Family, Apt. or Tenement

Size Service	Size and No. of Meter																								
APPLIANCES	Gas	Coal	Gas Only	Register	Burner Depth	Grid Top	Skeleton Lids	Closed Top	Fixed Orifice	Mixer-Orifice	Maintenance Cost	Maintenance Poor	Clean	Dirty	No Flue	No Damper in Flue	Size Pipe	No Installation	Heat Connection	Draught Poor	Efficient				
Range . . .																									
Hot Plate																									
Water Heater Y. A. G. I. —																									
Grates R. L. A. —																									
Heaters																									
Laundry Dryer																									
Incinerator																									
Furnace H. A. H. W. G. —																									
Miscellaneous Appliances																									
Lights																									

Type of card used for individual customers

for next year and will enable the salesmen to direct their efforts on the best prospects at the proper time. We expect that next year we can direct our advertising at the prospect's particular points of sales resistance, economy, dependability, etc., through the direct mail method. The entire residential sales division in spite of its remarkable showing under adverse business conditions has just begun to hit its stride, and 1931 looms up as a banner year in which a greater speed will be shown.

Gas in Home Essay Wins $25 Prize

CUSTOMERS of the Consolidated Gas Company of New York and affiliated gas companies took part in an essay contest recently on the subject of "What Phase of Gas Service Makes the Most Important Contribution to the Comfort and Convenience of the Modern Home?"

First prize of $25 was won by Miss Annabelle Mosher, of 191 Waverly Place, New York, for her essay on house heating with gas. An essay on gas refrigeration was awarded second prize of $15 and two essays on automatic cooking and one on water heating were each given $5 prizes.

The prize winning essay follows:

"Great selective ability is required in choosing the outstanding good rendered to humanity by the Automatic Gas Service, yet without long hesitation I cast my vote for the house heating feature of your service.

"I live in the old Chelsea district of the city, where Dutch mansions have been converted from heatless vacuums to livable quarters by the installation of gas heating appliances. Without marring the sturdy beauty of these old homes, modern convenience and gracious warmth have made the houses twice as charming to their residents.

"New Yorkers, in a pinch, can eat their meals out, they could still resign themselves to the daily visits of the ice-man if it were necessary, but to endure the grim blasts of a Manhattan winter without an adequate heating system, would be woe to contemplate. A cozy, glowing fire in the bedroom heater makes getting up and getting started for the day a less exasperating affair. Midnight chats around a trusty fireplace, where conversation never languishes and neither does the supply of logs, makes and keeps friends, and envious callers. To my mind, the necessities are always to be rated above the luxuries, and that is why gracious living is always synonymous with a gas heated home."

Book Reviews

SHEET STEEL AND TIN PLATE. By R. W. Shannon. Chemical Catalog Co., New York. 1930. Cloth 6 x 9 in. 285 pp. illus. diagrams, tables.

Dedicated to all those engaged in the utilization of sheet steel products, this book discusses in clear and easily understood language the practical side of sheet steel and tin plate production. The author has kept a weather eye open toward the goal of providing the reader with a knowledge of sheet mill practice which will help him improve his product and utilize sheet to the best possible advantage.

Frequent use of summaries tabulating properties and applications of sheet and tin plate make available at a glance critical data for the selection of the best material for a given purpose. The book should find a favored spot in the library of those in the sheet metal industries.

"EVERYDAY PHYSICS"

This is the title of a new book written by Dr. C. J. Lynde, head of the Household Engineering Department of Teachers College, Columbia University. Dr. Lynde for the last four years has conducted a course on gas appliances at the regular summer session of Columbia. In this work he has received the cooperation of the American Gas Association with special assistance from the Consolidated Gas Company of New York and many manufacturers.

The illustrative examples and applications used in the book are taken chiefly from the home. The study of heat is given especial attention; with gas burners, meters, gas ranges, oven thermostats, refrigeration, hot water and house heating all taken up quite in detail.

The publishers are The Macmillan Company, Sixty-Fifth Avenue, New York, N. Y., and the cost is $1.80.

Inland Empire Company is Sold

PURCHASE of the Inland Empire Gas Company, at El Centro, by the Natural Gas Corporation of California marks the entrance of this newly-formed organization into one of the richest and most fertile valleys in the country. This sale also marks the close of perhaps one of the most interesting of the smaller, privately-owned gas companies in the State, and with the development program underway by Natural Gas Corporation of California, is expected to be of material aid in the future growth of this entire area.

Gas service in this territory has met with instant and whole-hearted approval on the part of all residents, and the number of consumers exceeds the anticipations of company officials.

Research Project in Ceramics at Rutgers

By ARTHUR P. WATTS

American Gas Association Fellow, Department of Ceramics, Rutgers University

Special Gas Furnace for Semi-Commercial Tests on Direct-Firing of Ceramic Ware

THE volume of gas, both natural and artificial, which is used today in the firing of ceramic wares is small as compared to the total fuel used in the ceramic industry. Coal and oil fuels are firmly established and are used extensively in all branches of ceramics. This large potential field for gas has been noted by the Committee on Industrial Research of the American Gas Association. They are accordingly sponsoring in the Department of Ceramics at Rutgers University a research in the firing of ceramic wares with gas. This research has for its ultimate aim the development of suitable furnaces for the direct-firing of ceramic wares with gas.

In many localities gas cannot compete with coal and oil on the basis of cost alone. Usually there are other factors which make gas an attractive fuel, notably convenience of application, improved quality of the finished product, ease of control, increased production, etc. This condition holds true for the ceramic industry; therefore it is desirable to get all the technical facts bearing on the application of heat to ceramics and bring to the attention of ceramic manufacturers the possibilities of gas as a fuel.

Most of the wares known as the "white wares," which includes floor and wall tile, tablewares, porcelains and other pottery products, are subjected to at least two heat treating operations; one in which the raw green clay piece is fired to produce the finished body without glaze, and another in which the glaze is fused onto the piece. It is the usual practice in both of these firing operations to protect the wares from the direct action of the furnace gases by either placing them in saggers, which are refractory boxes of comparatively small size, or firing in muffle kilns. It has been estimated that from one-third to one-fifth of the kiln load is composed of saggers when these are used. In periodic kilns these saggers constitute a dead load which must be heated and cooled. In tunnel kilns the same condition holds true as the amount of fuel required to fire both saggers and ware is much greater than that which would be required if only ware was passing through the kiln. It may also be stated that a tunnel kiln of the muffle type requires more fuel than a tunnel kiln of the direct-fired type. If direct-firing of ceramic wares could be accomplished a saving of fuel would result through the elimination of saggers and muffles. In firing with coal or oil the elimination of saggers and muffles has not been possible, due to the difficulty of maintaining a furnace atmosphere free from harmful gases such as sulphur dioxide.

If in using gas as a fuel the elimination of saggers and muffles were possible, there is no question but that gas would become a very attractive fuel in this industry. The purpose of the American Gas Association Research in the laboratories of the Department of Ceramics at Rutgers University is to demonstrate this fact.

When the research was inaugurated in January, 1929, very little fundamental information concerning the effect of furnace gases on glazes was available. The field of glazed wares is a most important one since it includes tile, tablewares, and pottery, and direct-firing would find a ready welcome. The research has a threefold purpose:

1. The obtaining of basic information concerning the effect of furnace gases on glazes; this information to be obtained in a strictly laboratory investigation.

2. The application of the data so obtained to direct-firing on a small scale.

3. The application of the data to direct-firing on a semi-commercial scale.

The first part of the research has been completed; the second part is now being carried on and is partially completed; the third part is to be initiated soon.

In the first phase of the investigation it was necessary to determine just what gases could possibly be present in a furnace atmosphere. If complete combustion of a gaseous fuel occurred with no excess air, the only possible gases of combustion would be carbon dioxide, water vapor, nitrogen, and perhaps traces of sulphur dioxide. If excess air were present, oxygen would be added to this list and if incomplete combustion took place, carbon monoxide and perhaps unburned hydrocarbons would be present.

It was decided to subject the glazes used to each of these gases in order to discover which ones were harmful. Nitrogen, carbon dioxide, oxygen and sulphur dioxide were obtained in cylinders under pressure. Carbon monoxide was generated in the laboratory by passing carbon dioxide through incandescent charcoal at a temperature near 1700° F. The unconverted carbon dioxide was removed by passing the gas through potassium hydroxide. Steam was generated in a small boiler and superheated before being passed into the experimental furnace.

After the effect of each gas on the

glaze was ascertained, combinations of gases were used which simulated the furnace atmosphere resulting from the combustion of city gas. The city gas at New Brunswick, N. J., the location of Rutgers University, was analyzed and the products of combustion calculated. It was found that given complete combustion with no excess air, the products of combustion would be composed of about 14.3% CO_2 and 85.7% N_2 on the dry basis. The composition of the flue gases when varying amounts of excess air were present was also calculated. These calculated mixtures were then used in tests to form the atmosphere of the experimental furnaces.

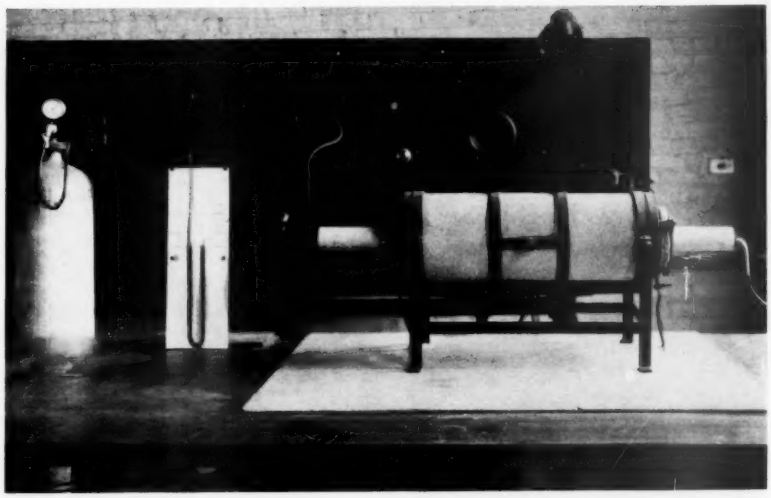
Many interesting results were obtained in this first phase of the investigation. It was discovered, for instance, that carbon monoxide and sulphur dioxide were very harmful gases, usually destroying the quality of the glaze. Carbon dioxide and nitrogen, while not so harmful as the two gases just mentioned, were not usually helpful in obtaining a good glaze. Oxygen had no harmful effect.

In tests using combinations of gases, it was found that an excess air content of 30 or 40 per cent was helpful in obtaining good glazes. It was also determined that sulphur dioxide could cause trouble when present in concentration of only .25% of the furnace atmosphere. This content of sulphur dioxide is, however, far greater than that which would result from the combustion of a city gas containing 30 grains of sulphur per 100 cu.ft.

The apparatus used in controlling and regulating the gases from cylinders and the externally heated tube furnace used in the first part of the research are shown in the illustration. When two or more tanks were used the outlet from each flowmeter was connected to a common tee and the gases thus mixed before entering the furnace. It can readily be seen that practically any furnace atmosphere could be produced in this manner.

The first phase of the investigation showed that it was feasible to fire wall tile glazes in an atmosphere composed of the products of combustion of city gas, especially if about four or five per cent of oxygen were present.

The second phase of the investigation involved the application of the basic information obtained in the first phase to actual direct-firing on a small scale. In pursuing this phase of the investigation, unfired glazed samples of both tile and tableware were secured from the Perth Amboy and Trenton districts of New Jersey. In firing these specimens, the furnace shown is being used. This is an ordinary gas-fired, hearth-type furnace using a two-pipe combustion system and fired on both sides beneath the hearth. The specimens are laid either on the hearth or elevated slightly above it.



Small Tube Furnace for Testing Effect of Various Gas Atmospheres on Ceramic Samples

The results obtained in this furnace have largely confirmed the information obtained in the first phase of the research. It has been amply proved that glazed tile can be fired exposed to the furnace atmosphere as long as an oxidizing condition prevails. Very good specimens, which were equal in quality to those fired in regular production in the industry, have been obtained. The work with table ware is going on at the present time and encouraging results are being secured. Terra cotta, sanitary wares, and electrical porcelains remain to be investigated in this second phase of the research.

Since the results of the second part of the research have been so encouraging, the third phase will be initiated soon. This phase will consist of developing a suitable furnace for direct-firing ceramic wares on a semi-commercial scale. The furnace may be of the continuous tunnel type, or it may take the form of converting a muffle furnace in some ceramic plant.

The complete results of the first part of the investigation will be available in a report to be published soon by the Committee on Industrial Gas Research. In addition, in order to acquaint ceramic engineers with the facts obtained in the work, articles are being published in the journals devoted to that industry.

Newspaper Commends Washington Gas Co.

UNDER date of December 12, 1930, the Washington (D. C.) "Times" said:

"The Washington Gas Light Company refused to recognize this as an era of serious depression. Instead of cutting expenses and laying off employees it proceeded with an energetic campaign of selling its products to the public. It succeeded so well that in twenty days it put on eighty men in one department and is starting another campaign that offers work to forty men.

"That's business success, backed by sound civic ideas, as witness this from one of the company's newspaper advertisements:

" 'No company has the right to shift the burden of economic depression entirely on to the worker whose very existence depends upon his opportunity to earn a living. Every man has the right to work and every company has the moral obligation to expand and to provide more work.'

"You will willingly join this newspaper in commending the good work of the able officials of this company."

The Gas Industry's Research Program in Metallurgy*

By EUGENE D. MILENER
Industrial Research Representative
American Gas Association

E. D. Milener

THE program of research in the application of gas heat to forging has been carried on diligently during the past year, as originally set forth at the time it was started. Forging research has been conducted along two different lines, one purely scientific and the other thoroughly practical. There are many inherent difficulties in the economical application of a refined fuel to forging, due to its being a very high temperature operation and also to the fact that forging is generally done on a large scale.

From the scientific standpoint, it has been necessary to systematically find out the many factors that have a bearing on the final quality and cost of forgings beside the bare B.t.u. cost of the fuel. These factors are largely metallurgical. There was an utter lack of technical information and data on some of these factors. Information on others was quite meager and not in such shape that it could be readily utilized in designing or operating gas forging furnaces. The committee, therefore, has sponsored forging research of a metallurgical nature that has gone very deep into the subject. In fact, it has been necessary to delve into certain phenomena concerning the characteristics of heated steel that at first glance seem to be far away from the use of gas. However, this is not the case, as experience has shown that, due to the way modern industry is making forgings, and the demands arising from use, every metallurgical factor must contribute its share toward stronger, better and cheaper forgings.

Our research along these lines has covered burning, overheating, scaling, decarburization rates of heat penetration, and other factors that enter into the heating and production of quality forgings. The work which is being carried on for us by the Department of Engineering Research of the University of Michigan, is now in the advanced study of scaling in forging furnaces. It is expected that the program will be completed within another year. The results of this research are being presented to science and industry from time to time, largely through the medium of the American Society for Steel Treating. Papers and bulletins by W. E. Jominy, our metallurgist at the University of Michigan, have been presented before the conventions of the Society and published by the Society. Additional results of our forging research were presented at the annual convention of the Society this past September.

It is expected that upon the completion of this program of forging research, gas company engineers and furnace manufacturers will have available practically all the metallurgical data which influence the heating of steel for forging. This will not only serve as a guide in designing new equipment but will make it possible to redesign to advantage many existing forging installations now being held on gas with difficulty in the face of competition. While most of the results and recommendations of this research up to this time have been published in a form of particular interest to the metallurgists of the country, it is planned to publish the complete results in non-technical language for the benefit of industrial gas salesmen, shop foremen and others.

At the request of the Research Committee, the Surface Combustion Company has made a thorough digest of the metallurgical research that has been done in forging and has been engaged in designing, building, testing, installing, and operating under practical, modern, shop conditions, gas forges that meet all the metallurgical and practical requirements necessary to assure the retention of existing load and the securing of an increasing amount of this desirable wholesale business. A long range of experimental models have been made. Some passed all development laboratory tests but failed to meet the very severe working conditions of a forge shop. Others met the shop conditions but lacked complete metallurgical control. It must be remembered that the aim of this research is to lift gas forging out of the strictly B.t.u. competitive class by determining and then controlling every factor affecting the structure and surface of the steel after it has been heated and soaked in the furnace at very high temperatures.

The net result of these tests and experiments has been the development of a "Diffusion Flame Gas Forge." This forge burns gas with a luminous flame, thus equaling the highly desirable radiant energy of an oil flame, which has helped make oil so desirable for forge heating. Radiant energy from this flame penetrates a blanket of gas which surrounds the steel billets and which protects the billets from scaling and decarburizing. This is an entirely new departure in gas furnace construction and there are still many details to be worked out and proved in practice. However, the committee believes that basically this method of high temperature heating will place gas in a strong competitive position with other fuels and will give industry a tool that will be of great advantage to it. This belief is shared by a number of forge men who have examined the furnace and who know the needs of forge shops.

Through the courtesy of the Great Lakes Forging Company of Chicago the shops of this large concern have been thrown open to our re-

*From an address before the Rhode Island Chapter, American Society for Steel Testing, Providence, R. I., December 17, 1930.

search workers and are being used as a proving ground. Officials of this company are showing the keenest interest in our development and their technical staff is offering every assistance in bringing about a speedy completion of this development. Experimental work in that plant is done mostly with chromium steel where the specifications allow very small tolerances for machining. Very shortly large scale experimental work will begin in the plant of the Spicer Mfg. Company of Toledo.

Bright Annealing

The research on bright annealing has resulted in the elucidation of certain factors which had not previously been clearly understood by those practicing this art in industry. A brief review of the situation as it stood at the inception of this research will be helpful in an understanding of its purpose and of the methods carried on in the laboratory in arriving at a solution of the complex problems presented.

The principal metals dealt with in order of their importance are brass, copper, nickel silver, and steel. Of these, brass has been the subject of most prolonged research in that its behavior under heat was least understood and it was felt that in arriving at a solution concerning it, the way would be paved to more quickly solving the problems presented by the other metals.

It is common knowledge that these metals when worked cold increase in hardness to a point where further working would result in embrittling and cracking of the part being worked. When this point is reached, the metal must be softened or "annealed" by the application of heat. In the annealing process two principal factors are involved; the character of the grain structure and the character of the surface.

Generally speaking, there are at present no difficulties in annealing these metals to secure the proper grain structure. Considerable work has been done by others concerning this phase and conditions have been established whereby those versed in the art may attain the desired results with a multiplicity of furnace equipment now available for this purpose. The problems presented by the character of the surface are, however, of a more complex nature, and have as yet and on the whole failed of proper solution. It is with this phase that this research has been entirely concerned.

All these metals are readily oxidizable under heat, some more than others and brass most readily of all.

Whereas methods are now employed which result in a commercially satisfactory bright anneal for steel and copper, and to a very limited extent for nickel silver, there are none as yet fully developed which will effectively bright anneal brass. The methods developed as the result of this research come as near to solving this problem as any that have been so far disclosed.

Steel and copper may be bright annealed in an inert atmosphere such as pure nitrogen. Other atmospheres are satisfactorily employed commercially. For instance, steel is commonly annealed by placing it in luted containers in which iron borings are sometimes packed. These borings combine with the oxygen of the air present in the container leaving an atmosphere of substantially inert nitrogen. When the container is removed from the furnace, a stream of gas is passed into it sufficient to exclude air from entering during the cooling period. City gas is commonly used for this purpose. This method, however, does not meet the requirements when steel must be annealed in single layers, and is more readily adaptable to annealing in large masses.

In annealing copper, more particularly copper wire, an atmosphere of superheated steam is commonly used to exclude air from the container. Under certain conditions and for certain requirements, this method produces satisfactory results. The metal, when removed from the furnace is immersed in a water bath which acts also as a seal for the furnace. This wetted surface, however, quickly loses its brightness as the result of so-called "water staining" and for certain purposes such staining is highly objectionable.

Brass and nickel silver are almost universally annealed in open containers and exposed to the effects of combustion gases or air under heat. Their surfaces are discolored and even badly scaled and must be restored to brightness by pickling before the metal is again subjected to further working. The pickling process is universally objectionable, generally costly and one which it is most desirable to eliminate.

This research has proved that brass is self-oxidizing under heat. This is a fact, heretofore not clearly understood. It necessitated the development of a process which should possess as one of its main characteristics the ability to be highly reducing to the metal without adversely affecting the physical nature of its surface or of its internal grain structure. One of the best known reducing gases is hydrogen. Its effects were studied and it was found capable of counter-acting the self-oxidizing properties of brass to the point that the brass could be successfully bright annealed in such an atmosphere. It was subject, however, to two main objections; it is highly explosive and is not readily available in a pure state except at high cost.

The problem was next attacked from the standpoint of determining whether hydrogen-bearing compounds could be so treated that under heat they could be caused to liberate hydrogen in contact with the metal to be annealed. From this research was evolved the "methanol" process. It was found that if methanol vapor in a diluted state was caused to flow over heated brass, it would liberate hydrogen in contact with the metal surface and in such a manner as to be highly reducing. The effect was in fact far more rapid than when pure hydrogen itself was used. Other hydrogen compounds have been studied, more particularly propane, now commercially available in pressure containers. Conditions are now being studied which will more clearly define its advantages or disadvantages as compared with methanol. Other and similar gases are also to be studied. But most progress has been made in the use of methanol as will appear further on.

One of the chief obstacles in bright annealing brass is that the articles to be annealed do not themselves present a "clean" surface. In working the metal cold some lubricant is used to facilitate the operation and this lubricant adheres to the surface. When

annealing in open containers this lubricant is vaporized or oxidized and when the annealed metal is subsequently pickled the effects of the lubricant are generally satisfactorily removed. When annealed in a reducing atmosphere, however, the lubricant does not oxidize. If it be readily volatile, it may be vaporized. Otherwise, such lubricants, being usually complex carbon compounds, they will crack under heat, leaving a residue of carbon on the metal surface which is highly objectionable. It has been found that light petroleum lubricants do not present serious difficulties when brass so lubricated is annealed by the methanol process. But heavy lubricants, soaps and fatty substances must first be washed off or otherwise removed if the brass is to be successfully bright annealed by this process. And it may be added that it is difficult to conceive of any process which will successfully bright anneal brass which still retains on its surface other than mere traces of such lubricants.

By gradual stages, and with the use of furnace equipment increasing in size, the methanol process has been developed in the laboratory to a point where it is practically ready for commercial development. There are two questions which remain to be solved. One is metallurgical and the other economic.

The first has to do with the character of the metal surface as it leaves the furnace in a bright annealed condition. It must be remembered that "brightness" of itself is not the prerequisite in such an operation. It is but an indication that the metal surface is free from oxides or foreign substances which might adversely affect the subsequent cold working operations. The condition of the metal structure at its immediate surface has as important a bearing on these operations as the internal rearrangement of the grain structure resulting from subjecting the metal to heat.

The determination, in the laboratory, of what constitutes a satisfactory surface structure is difficult in the face of widely divergent requirements in industry. The surest method of determining this important point is to anneal a sufficient quantity of a particular brass shape by this process and to subsequently subject it under actual shop conditions to the desired cold working operations, thereby establishing a direct comparison with the existing open annealing and pickling methods now in use.

For this purpose, a gas-fired annealing furnace has been designed and built in the laboratory suitable for effectively carrying out the methanol process and of such size as to duplicate the cycles and quantities now in common use in industry. Of itself the furnace cannot solve the problem. There is involved a cooperative undertaking with some manufacturing plant whereby brass shapes annealed in this furnace can be further worked in the plant to arrive at a satisfactory solution.

Such a cooperative arrangement was established early this year which, however, was frustrated by the time element necessarily involved in practically working out the many intricate phases of this problem. The experience gained, however, was of considerable value in arriving at an understanding of heretofore unknown factors. In June of this year contact was established with another manufacturer and very definite progress has been made. Small quantities of brass shapes have already been annealed in two stages of their manufacturing process and have proven entirely satisfactory. Arrangements are now being made for the shipment to the laboratory of several thousand pounds of these shapes. This will fulfill a double function. It will permit the determination under quantity production of the effectiveness of the process and simultaneously the cost of the methanol operation. There is now every reason to expect that both these important questions will be answered in a manner as to pave the way to the definite commercial development of this method of bright annealing in which gas fulfills an inherent function.

The anticipation that a process satisfactory for bright annealing brass would be readily adaptable to nickel silver has been fulfilled. In so far as the appearance of the metal itself is concerned, the surface of nickel silver when annealed by the methanol process is actually brighter than that of the unannealed metal. Samples from two manufacturers of flat silverware have been treated with results apparently highly satisfactory. Arrangements have been made for both to ship quantities of their ware to the laboratory where the process will be conducted in the presence of their own experts. The cost of operating the methanol process on brass could be readily applied to the operation on nickel silver.

The application of gases, such as propane, to bright annealing would seem at the present stage of development to be more applicable to copper and steel. It will be recalled that these two metals are not self-oxidizing under heat and atmospheres which are not necessarily highly reducing may be used to good effect. More particularly with reference to copper, it has been found that an atmosphere of flue gas, if free from oxygen and containing but two per cent of carbon monoxide, may be used effectively in bright annealing copper provided this atmosphere is kept quiescent with respect to the work. For satisfactory operation, however, it is necessary that the muffle be sealed against the intrusion of air and this limitation will impose certain difficulties in furnace construction with respect to introducing and discharging the work.

With gases, such as propane, the gas itself may be used as the sealing agent in that it will combine under heat with intruding air still leaving an atmosphere inert to copper. This makes it particularly applicable to annealing copper wire in strands. A single-strand furnace has been in successful operation in the laboratory by this method. There now remains to be developed a suitable mechanism for reeling and unreeling the wire coils so that the rate of travel through the furnace may be definitely established and maintained under constant control. As soon as this mechanism is completed and tested (within the next few weeks) demonstrations will be made to a number of wire manufacturers for whom preliminary work has been done in the laboratory.

A by-product of satisfactory strand annealing of copper wire is that the wire can be annealed and tinned in a single operation. Actually this has been done in the laboratory and opens new possibilities in those plants manufacturing tinned copper wire.

The same experimental furnace used for bright annealing copper wire has also been tried out in bright annealing steel strip in a preliminary way with entirely satisfactory results in so far as surface is concerned. A demonstration has been made to one manufacturer of steel strip who brought his own product and was convinced as to the effectiveness of the process. In the case of steel, however, the control of speed through the furnace is of even greater importance than it is with copper as the metallurgical requirements are more rigid. As soon as the reeling mechanism is operative, work will be resumed on steel strip with every expectation that requirements as to both metallurgy and surface will be effectively met by this process.

Among the commercial firms that are cooperating in this work with our research workers, the Surface Combustion Co., are Oxweld Co., Essex Wire Co., Acme Wire Co., Rome Wire Co., Thompson Wire Co., Gorham Silver Co., Oneida Community, Ltd., and officers of the Frankford Arsenal.

This work may be summarized as follows:

1. Research in the laboratory has established the requirements which must be met in order to effectively bright anneal brass.

2. Based on these requirements, a process has been developed, known as the "methanol" process.

3. A furnace interpreting these requirements has been developed in the laboratory on a scale adequate to demonstrate its effectiveness.

4. Brass shapes, as ordinarily produced in industry, have been successfully bright annealed in this furnace and by this process.

5. The working qualities of brass so annealed have yet to be fully demonstrated.

6. The cost of operating the process remains to be determined.

7. The process and furnace are readily applicable to bright annealing nickel silver and have been so demonstrated.

8. The use of other organic gases, such as propane, is now undergoing study and test.

9. Strand annealing of copper wire by the use of propane has been successfully demonstrated in the laboratory.

10. Suitable mechanisms for controlling the process are in the course of development.

11. Strand annealing by this process permits combining annealing with tinning into one operation.

12. The same process is equally applicable to bright annealing steel strip, the time-temperature cycles remaining to be established in order to secure predetermined metallurgical characteristics.

Decarburization of Steel at Heat Treating Temperatures

Intensive work on this project has been carried on for two years. There has been some misunderstanding on the part of metallurgists as to the effect of various atmospheres on decarburizing steel when it is being heat treated. In fact metallurgists in the same company have disagreed quite widely. In order to try to run down the true facts the University of Michigan has been doing this work. I am sorry I cannot tell you more of this work, but no reports of any kind have been released. It is expected that the complete results of the research will be in shape for the Pacific Coast meeting of the American Society for Steel Treating.

Brass Melting

In 1921 the United States Bureau of Mines laid down nine specifications that a really satisfactory brass melting machine should meet. The American Gas Furnace Company working under contract with the American Gas Association research committee has developed a gas brass melting machine that seems to meet all these requirements for modern factory practice. We believe this is the most advanced fuel fired melter yet designed. Developing a metallic retort has been one of the most ticklish research problems we have ever tackled and that research has not yet been completed.

Field tests in several well-known foundries are being continued.

Two contracts of interest have just been signed. These call for research in the application of gas heat to short cycle malleablizing and for research in scaling at heat treating temperatures. Work is now getting under way in both of them at the University of Michigan, Department of Engineering Research.

Another project, being conducted in the laboratories of the C. M. Kemp Manufacturing Company of Baltimore for us, is a study of materials suitable for immersion gas burner tubes, for zinc base die casting and galvanizing furnaces. The art of burning gas in very confined spaces has advanced very rapidly in recent years, and the Research committee has found that the Kemp system lends itself to burning at such high capacities that gas immersion elements suitable for competing with the conventional electric element in soft metal melting are quite practicable. Research work in this field has resulted in gas immersion melting installations that not only duplicate the performance of electric units but reduce the operating cost very materially. A notable example is the large, heavy-duty stereotype pots of the *New York World*.

In this connection I would like to mention that we have recently made the first installation of Kemp submerged burners where the gas is burned directly in the liquid itself. This installation at the plant of the Federal-Mogul Co. gives promise of showing thermal efficiencies heretofore unheard of.

Other active research projects of a highly scientific nature, although not confined to the field of metallurgy, are research in the elimination of noise in industrial gas burners and research in burning gas with preheated air. The results of these two pieces of work will contribute toward better factory conditions.

These projects and those in other industrial fields constitute the gas industry's program in improving and extending industrial gas utilization. Such a program takes time, patience and costs many thousands of dollars. But it is a necessary step in bridging the gap between yesterday's methods and today's mass production requirements.

Research is generally associated with the newer industries, such as radio, automobiles, aeronautics, and others, but the entire research program of the gas industry stands well up in the list. We are the oldest of the public utilities, being well over one hundred years old. But the gas companies constitute a pretty healthy business to have such a long life to

look back upon. The beginning of the industry's existence practically coincides with the industrial revolution. The gas business, therefore, is the only public utility that has been through every period of industrial depression and expansion as we now think of those recurring cycles. In addition to emerging from each period of depression in a stronger position, serving more people and serving them better, the industry seems to more and more justify the expression of the wag who said that the gas business is an old business growing young. We gladly turned the lighting load over to our vigorous young offspring, the electric industry, and take great pride in watching the remarkable growth of that energetic and successful public utility. But we take a still greater pride in the fact that recently, that is, during the decade since the World War, the public has shown a renewed appreciation of its old reliable gas utility. During this decade, for the entire country, the average composite customer has increased his yearly purchases of gas 40 per cent and has increased his yearly purchases of electricity 2 per cent. And so today we find that the total electric energy being purchased yearly is 259 trillion B.t.u. and the total gas energy being purchased is 2055 trillion B.t.u. or nearly eight times as great.

We believe that this rate of growth will be greater during the next decade than it has been during the past. We base that belief largely upon this fact. Every trend in homes and factories is toward supplying necessary and desirable services of all kinds automatically and continuously from sources outside the factory and home. I contend that the development of homes and factories can only proceed in proportion to the extent that heat, light, power and water are brought in from the outside and put to work automatically. In the home, that program is pretty far advanced as regards cooking, water heating, lighting, water supply, sewage disposal, refrigeration, and the small uses of power. The final steps are getting under way. These steps include automatic heating and humidifying and finally automatic cooling and dehumidifying in the summer.

In the factories many heating operations, lighting, water supply, sewage disposal and power are already in the class of being automatically supplied from the outside. The remainder of the industrial heating operations seem to provide the drawback to the further use of energy thus supplied. Automatic heating and humidifying of factory buildings is getting well under way and automatic cooling and dehumidifying will come in time.

The metallurgical researches of the American Gas Association are a step in bringing the remaining industrial heating operations into this class. All the fundamentals must be known before the present technical and economic set-up in a particular operation can be discarded and something more advanced substituted. But in the final analysis these changes will take place. In fact, they are taking place, as witness the gradual change to automatic heat-treating furnaces, automatic core ovens, automatic kilns of various kinds and the gradual introduction of automatic forging. With regard to the source of energy, it must be uniform, it must be supplied automatically and be available continuously. It must be clean and it must be suitable for use under the new factory conditions. Among other sources of energy gas meets these requirements in most cases and research is fitting it to meet them in all cases. Upon what then will the final fuel acceptance by industry depend? Upon fuel economics.

The gas industry knows it will always be able to automatically deliver energy cheaper per B.t.u., and that as the factory and home develop it will be called upon to take on increasing responsibilities. That is why it is diligently pursuing metallurgical research. That is why it is also busily engaged in similar research in other important industrial fields such as ceramics, bread baking, chemical processes and others.

And there is one other thing I want to tell you because it concerns people, the people who work with iron and steel as well as all other people. We are on the threshold of a period when this source of cheap automatic energy will be making our offices, factories and homes comfortable in the summer time. Despite the progress that has been made in conditioning theatres and public buildings, you and I must swelter through the hot days of summer because no way has been found to make us comfortable without the installation of very expensive machinery with heavy fixed and running costs. In fact for all practical purposes no progress has been made in conditioning the air in the home in the summer time. I do not like to be too optimistic but I believe I am not over-stepping the mark when I say that research that is under way now in the gas industry will, within about one or two years, make it possible for you and I to cool and dehumidify our homes and factories economically and in a practical way, the same as we now heat and humidify them. And it will be done automatically, with gas brought in through the same pipes that have been serving us and our ancestors so well since the days of the industrial revolution. Truly, another indication of an old industry grown young!

Contracts Awarded for 158-Mile Pipe Line

CONTRACTS for constructing a 158-mile natural gas pipe line in southwest Louisiana have been awarded by the United Pipe Line Corporation, a unit of the United Gas System, and it is expected that construction work will be completed by March 1.

The line will start at a point near Kirbyville, Texas, and will extend to Franklin, Louisiana. F. C. Youmans Company and the Sexton Corporation of Texas were awarded contracts for construction of different sections of this line.

The main line will serve DeQuincy, Crowley, Welch, Jennings, Broussard, Youngsville, St. Martinville, New Iberia, Jeanerette and Franklin. The sizes of pipe used on the main line will be as follows: Forty-six miles of 14-inch, sixteen miles of 12-inch, fifty-three miles of 10-inch, thirty miles of 8-inch and thirteen miles of 6-inch.

Six lateral lines will extend from the main line and the entire project will serve about forty communities.

Gas Industry Alive to Public Relations Course

H. L. Donaldson

FREQUENT mention has been made in these pages of the American Gas Association course in Employee-Customer Relations. The course was inaugurated October 1, 1930. In the two and a half months which have elapsed to December 15, 1930, 4,000 men and women contact employees of gas and combination gas and electric companies have been enrolled, at a cost of $15 per employee.

This prompt and substantial response conclusively illustrates the industry's live interest in a program of public relations specifically designed to improve the performance standards of its contact employees. Furthermore, the large number of enrollments attests to the practical nature of the course and its ability to meet individual company requirements immediately and without the introduction of any complicated personnel set-up or other disturbing factor.

T. J. Perry

The progress of the course is naturally gratifying to all who have sponsored it since it was an idea and those who have labored earnestly ever since to make it a success. This includes the Committee on Education of Gas Company Employees which originally planned the course, the Association's Executive Board, which adopted and approved it, and a committee of seven members, all of them experienced in employee educational work, who undertook the highly important and arduous responsibility of reviewing and editing the prepared material of the course.

To this committee of seven is extended the major credit for making available to the industry a course which is workable, ready-to-use, thought-stimulating and thoroughly applicable in every detail to the requirements of the average contact employee in the gas business. It has been their task to read and pass upon every word in the six units or books and the leaders' manual, which constitute the reading part of the course. In some instances the committee ruled that certain new material had to be prepared to replace that already submitted. Every manuscript was carefully scrutinized and studied from the standpoint of its actual use by employees.

W. S. Vivian

The basic material for the course was gathered by J. David Houser and Associates, specialists in industrial and public relations, as the result of observing thousands of contact employees in their work, and in holding conferences with various groups of these employees to get their viewpoints in the solution of contact problems. Examples of right and wrong ways to handle customers, which are given in the text material, are taken from actual contact situations observed by the Houser organization. These examples were later subject to check-up by the review and editing committee. The practical character of the material in the course is thus largely due to this committee.

Henry Obermeyer

E. B. Luce

The members of the committee and their affiliations are:

H. L. Donaldson, The Philadelphia Company, Pittsburgh, Pa. Mr. Donaldson has been engaged in industrial relations work for the past ten years and is active in employee educational work in the A. G. A. and National Electric Light Association.

J. M. Roberts

T. J. Perry, The Brooklyn Union Gas Co., Brooklyn, N. Y. Mr. Perry is superintendent of the customers service division of his company.

W. S. Vivian, Middle West Utilities Co., Chicago, Ill. Mr. Vivian is vice-president in charge of public relations of his company. For many years he has served on association committees dealing with employee-customer contacts.

Henry Obermeyer, The Consolidated Gas Company of New York, New York, N. Y. Mr. Obermeyer is assistant to the vice-president and manager of his company's advertising and display department.

E. B. Luce, Consolidated Gas Electric Light and Power Company of Baltimore, Baltimore, Md. Mr. Luce is educational director of his company. In this capacity he is responsible for all educational and training work and the library service.

J. P. Leinroth

J. M. Roberts, The Peoples Gas Light and Coke Company, Chicago, Ill. Mr. Roberts is general superintendent of the customers' accounts department of his company.

J. P. Leinroth, Public Service Electric and Gas Company, Newark, N. J. Mr. Leinroth is general industrial fuel representative.

A. G. A. Plans to Take Part in Progress Exposition

FEELING that the gas industry should not permit the opportunity to demonstrate its contribution of a century to pass, the Executive Board of the American Gas Association has tentatively approved participation in the Century of Progress Exposition, which will be held in Chicago, Illinois, in 1933 to commemorate the 100th anniversary of that city's charter.

Acting on a report of a special committee, headed by H. C. Abell as chairman, the Executive Board, at its last meeting, agreed to an appropriation for the expenses of a preliminary survey looking toward the Association's proper representation at the exposition.

By adopting the following resolution, the Board also pledged the Association's approval to the plan for a nation-wide observance of the 200th anniversary of the birth of George Washington, in 1932:

"WHEREAS, The Congress of the United States has created a Commission to arrange a fitting nation-wide observance of the Two Hundredth Anniversary of the Birth of George Washington in 1932, and

"WHEREAS, The Commission so created, composed of the President of the United States, the Vice-President of the United States, the Speaker of the House of Representatives, four members of the United States Senate, four members of the House of Representatives, and eight citizens appointed by the President of the United States, is charged with the duty of planning and directing the celebration, and

"WHEREAS, The high purpose of the event is to commemorate the life, character and achievements of the most illustrious citizen of our Republic and to give every man, woman and child living under the Stars and Stripes an opportunity to take part in the celebration, which will be outstanding in the world's history, and

"WHEREAS, The George Washington Bicentennial Commission, desiring the full cooperation of the people in the United States, has extended a most cordial and urgent invitation to our organization to participate in the celebration, therefore be it

"RESOLVED, That the American Gas Association does hereby endorse the program of observance of the Two Hundredth Anniversary of the Birth of George Washington, to take place in 1932; accept, with appreciation, the invitation of the George Washington Bicentennial Commission, and pledge this organization to extend earnest cooperation to the United States Commission in all possible ways, so that future generations of American citizens may be inspired to live according to the example and precepts of Washington's exalted life and character, and thus perpetuate the American Republic, and be it further

"RESOLVED, That this resolution be incorporated in the official proceeding of this meeting and that a copy thereof be transmitted to the George Washington Bicentennial Commission, Washington, D. C."

Four McCarter Medals Are Awarded

THE McCarter Medal and Certificate were awarded to Fred W. Kauth, traveling mechanic, and the McCarter certificate to Arthur Castetter, both employees of the Public Service Company of Northern Illinois, at appropriate ceremonies held at Streator, Ill., November 14, 1930.

F. W. Kauth

The McCarter medals and certificates, donated by Thomas N. McCarter and awarded by the American Gas Association, are given to employees of gas companies who have been instrumental in saving human life by the Shafer Prone Pressure Method of Resuscitation.

Messrs. Kauth and Castetter saved the life of a Streator resident who had been overcome by gas.

Jesse T. Moore, fieldman of the Pittsburgh and West Virginia Gas Company, was awarded a McCarter medal for saving the life of a six-year-old girl, who had been overcome by gas while attending church services at Daybrook, W. Va. Four thousand people attending a picnic at Clarksburg witnessed the presentation of the medal to Mr. Moore. The award was made by F. F. Schauer, vice-president of the company.

J. T. Moore

W. Burkins

Walter Burkins, line foreman employed by the Public Service Electric and Gas Company, was another recipient of a McCarter medal for saving the life of a man who had been overcome by gas during a fire at Bound Brook, N. J. A police officer who saved a second victim was recognized for his heroism by the National Safety Council, and also was presented with a medal for his act.

C. Ruf

Following his first lesson in resuscitation, C. Ruf, yard foreman of the Wilmington Gas Co., Wilmington, Del., was called upon to demonstrate what he had learned and was successful in saving the life of John Ross, a laborer, who had been overcome by gas while at work. For this he was presented with a McCarter medal before a resuscitation class of the Wilmington Company.

Natural Gas Convention To Take Place in May at Memphis

THE annual convention of the Natural Gas Department of the American Gas Association will be held in Memphis, Tenn., during the week of May 11, 1931. This date was agreed upon by the committees in charge, and the actual dates for the session will be fixed by the Program Committee, which has been called to meet in Memphis, January 8.

Details for this meeting now are being worked out by the following committees:

General Arrangements—W. J. O'Brien, *chairman,* Memphis Power and Light Company, Memphis, Tennessee; B. C. Adams, Gas Service Company, Kansas City, Missouri; J. B. Corrin, Standard Oil Company of New Jersey, Pittsburgh, Pa.; H. L. Dickerson, United Gas Corporation, Houston, Texas; Edgar G. Hill, Southern Natural Gas Corporation, Birmingham, Alabama; D. C. McClure, Central Public Service Corporation, Chicago, Illinois; J. R. Munce, Arkansas Natural Gas Corporation, Shreveport, La.; F. F. Schauer, Equitable Gas Company, Pittsburgh, Pennsylvania; D. C. Shaffer, Memphis Natural Gas Company, Memphis, Tennessee; T. R. Weymouth, Columbia Gas and Electric Corporation, New York City; William Moeller, Jr., Southern California Gas Company, Los Angeles, California.

Program Committee—E. F. Schmidt, *chairman,* Lone Star Gas Company, Dallas, Texas; W. A. Dunkley, Memphis Power and Light Company, Memphis, Tennessee; T. J. Fitzpatrick, Western Public Service Company, Salt Lake City, Utah; T. H. Kerr, Columbia Gas and Electric Corporation, Columbus, Ohio; J. H. Maxon, North American Light and Power Company, Omaha, Nebraska; A. E. Merchant, New Orleans Public Service Incorporated, New Orleans; H. L. Montgomery, Cities Service Gas Company, Bartlesville, Oklahoma; W. B. Trammell, Houston Gulf Gas Company, Houston, Texas; George Wehrle, Public Service Company of Colorado, Denver, Colorado; W. S. Yard, Pacific Gas and Electric Company, San Francisco, California.

Publicity Committee—Paul Renshaw, *chairman,* Memphis Power and Light Company, Memphis, Tennessee; J. C. Barnes, New Orleans Public Service Incorporated, New Orleans; William C. Grant, Lone Star Gas Company, Dallas, Texas; C. D. Greason, Gas Service Company, Kansas City, Missouri; R. S. McBeth, Oklahoma Natural Gas Corporation, Tulsa, Oklahoma.

Hotels Committee—J. J. Brennan, *chairman,* Memphis Power and Light Company, Memphis, Tennessee.

Reception Committee—W. N. Ford, *chairman,* Memphis Power and Light Company, Memphis, Tennessee.

Two Generations of Service

ON Tuesday night, November 25, the executives of the Providence Gas Company, Providence, R. I., tendered a dinner at the University Club to Thomas F. Maloney in recognition of his 50 years' continuous, faithful and loyal service to the company.

T. F. Maloney

Mr. Maloney was born in Fox Point in 1860. After an education at the Thayer Street School and LaSalle Academy, he entered the employ of the Providence Gas Company in 1880 in a temporary position. His pay was $1.25 a day or $7.50 a week.

Thomas Maloney followed in the steps of his father, whose term of employment with the gas company began a few years after it was incorporated, in 1848, and continued until his death in 1880. Thus the service of the Maloney family to the Providence Gas Company represents almost fourscore years, an unusual record of service to one company.

In giving his reminiscences, Thomas Maloney said:

"Two things stand out in my mind as striking differences between the gas works when I first got a job there and the gas works as it is today. They are the elimination of hard physical labor by machinery and the accompanying change in the character of the employees. With the introduction of labor-saving devices, jobs in the gas works have become attractive. Men to whom appearance and efficiency, their own as well as of the machines they operate and maintain, is a matter of pride like to work there."

In his fifty years of service with the gas company, he had only one accident and that a sprained ankle which kept him at home for about a week.

In 1886 he married Hannah Daley, a neighbor of his since early childhood. They had two children, both boys, John and Thomas F., Jr. Mrs. Maloney died in 1911, when the younger boy, Thomas, was seven years old. Two years later, John, the older boy, died. John at the time of his death was working for the Providence Gas Company at its Sassafras Point Plant, following in the footsteps of his father and grandfather.

In 1924, Thomas F. Maloney, Jr., was appointed by Bishop Hickey for special education at the University of Louvain, Belgium. In July, 1930, young Tom was ordained. Soon after that he returned to this country and conducted his first mass at St. Joseph's Church, where both he and his father had been baptized and confirmed.

Convention Calendar

New England Gas Association,
Statler Hotel,
Boston, Mass.
February 3, 4, and 5.

Illinois Gas Association,
Springfield, Ill.
March 12, 13.

A. G. A. Distribution Conference,
Cincinnati, Ohio.
April 8, 9, and 10.

Missouri Association of Public Utilities,
Excelsior Springs, Mo.
April 16, 17, and 18.

Pennsylvania Gas Association,
Galen Hall,
Wernersville, Pa.
April 28 to 30.

Chamber of Commerce of United States,
Atlantic City, N. J.
April 28 to May 1.

A. G. A. Natural Gas Department,
Peabody Hotel,
Memphis, Tenn.
Week of May 11.

Institution of Gas Engineers,
London, England.
June 2, 3, and 4.

Canadian Gas Association,
Montreal, Quebec.
June 4 and 5.

Southern Gas Association,
Chattanooga, Tenn.
June 9, 10, and 11.

National Electric Light Association,
Atlantic City, N. J.
June 8 to 12.

Pacific Coast Gas Association,
San Francisco, Calif.
September.

American Gas Association,
Atlantic City, N. J.
October 12 to 16.

Fifth Mid-West Regional Gas Sales Conference

THE fifth Mid-West Regional Gas Sales Conference, sponsored by the Commercial Section of the American Gas Association, will be held at the Sherman Hotel, Chicago, Illinois, February 12 and 13, 1931. C. A. Nash, United Light and Power Company, Davenport, Iowa, is chairman and F. M. Rosenkrans, Gas Service Company, Kansas City, Missouri, is vice-chairman of the Conference.

As in previous years leaders in the industry will discuss sales plans and methods which have proved especially successful in the mid-west territory. During the coming year a large number of Mid-West gas companies will change from manufactured gas to natural or mixed gas service. With this in mind, an important part of the program will be devoted to activities of the sales departments preparatory to the distribution of natural gas, and steps taken during the transition period, with particular emphasis on sales activities to promote rapid development of the business under the new service conditions.

All gas company executives, sales managers, and others interested in these activities are invited to attend.

Fig. 1. General view of industrial plant heated by gas

Industrial Building Heating

By C. GEORGE SEGELER
Technical Editor, American Gas Association

ALTHOUGH it has been discussed many times in recent months, it cannot be too strongly reiterated that development in the field of gas is going ahead very rapidly, principally due to the spread of natural gas, and to the introduction of new special rates for gas heating. Natural gas lines have extended into thirty-three States, while only a few years ago the end of the natural gas production had been predicted.

The effect of this on the development of the heating business is most important, because natural gas very often can be purchased at much lower prices than manufactured gas. This does not mean that natural gas is necessarily a cheaper fuel than coal or oil, but it does mean that the availability of natural gas has an important bearing on the future trend of the heating industry, whether for industrial and commercial buildings, or for private dwellings.

Consider, for example, the situation in Dallas, Texas, which in the relatively few years since the introduction of natural gas, has become known as a smokeless city, principally because natural gas has supplanted almost all other fuels in that territory. The contribution toward improved living conditions, and the saving by the elimination of smoke and sulphur, cannot be measured. Everyone is familiar with the many reports which have been published on the damage done by these agencies. Why then, continue to suffer such losses and pay a smoke bill when a clean, sulphur-free, automatic fuel like gas is ready to serve the community by eliminating the trouble?

Just for the sake of completeness, it might be well worth while to consider for a moment what natural gas is. Although varying slightly in composition from almost pure methane to mixtures of methane and ethane with some inerts, the B.t.u. value of natural gas is generally in the neighborhood of 1,000 B.t.u. per cu.ft. The lowest B.t.u. of the pure natural gas is that served at Denver, where the elevation has reduced the B.t.u. value to 850. The highest B.t.u. value is in the neighborhood of 1,200, but by and large a middle figure of 1,000 is the one most commonly found. This compares with manufactured gas in the neighborhood of 530 B.t.u. per cu.ft.

Just as the development of natural gas has introduced lower priced gas for heating, so too has the widespread adoption of special rates in manufactured gas territory. For example, there is a large plant which was put in service last year using manufactured gas on a new special heating rate in Cranston, Rhode Island. The

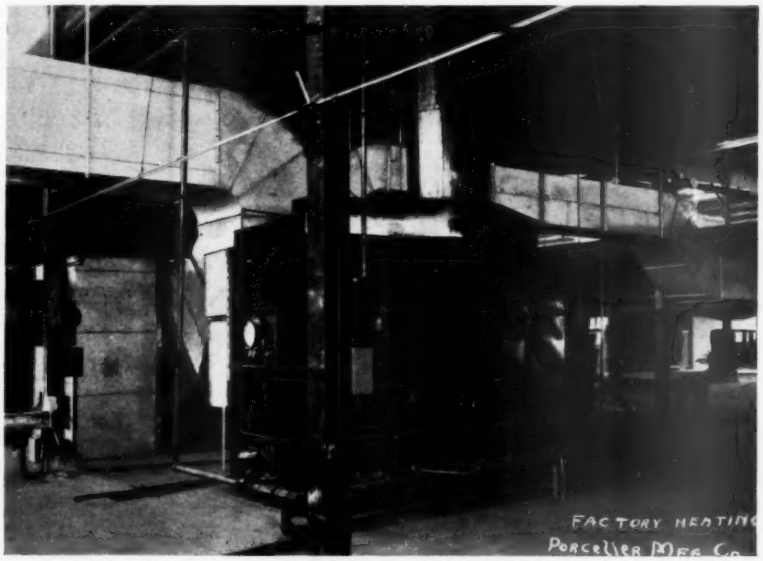


Fig. 2. Gas heater for duct air heating

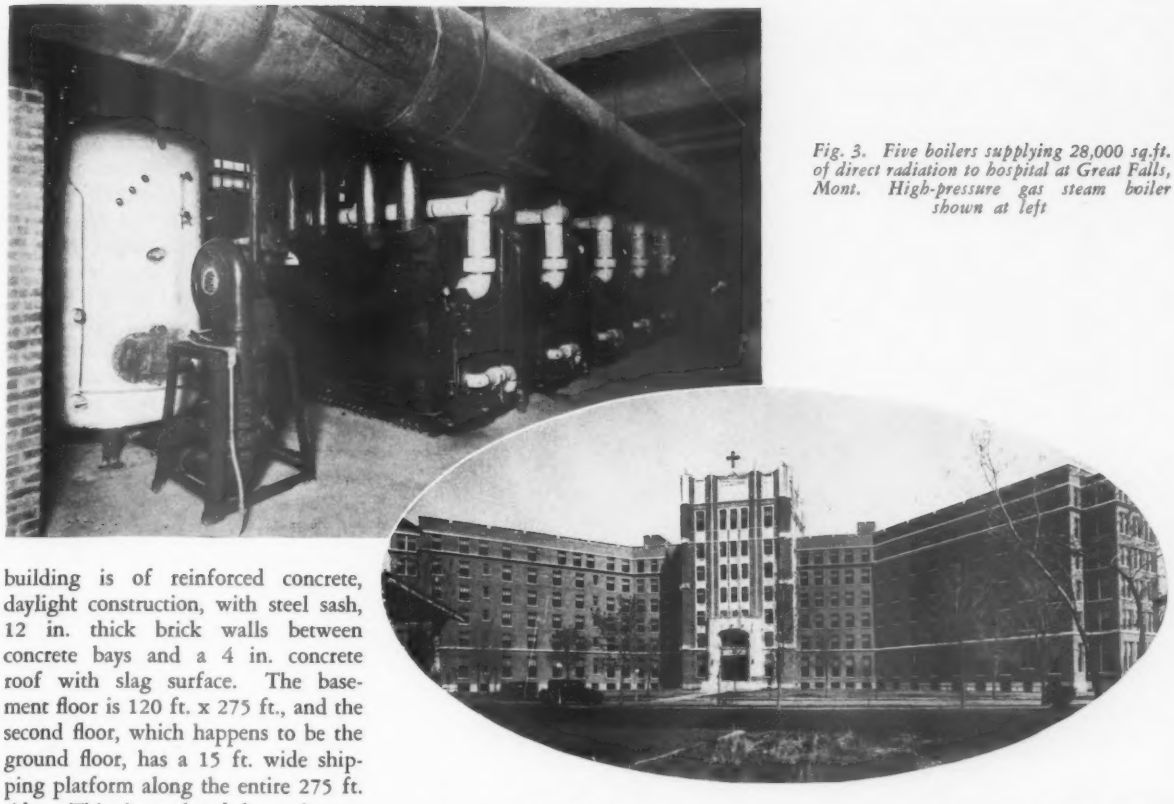


Fig. 3. Five boilers supplying 28,000 sq.ft. of direct radiation to hospital at Great Falls, Mont. High-pressure gas steam boiler shown at left

building is of reinforced concrete, daylight construction, with steel sash, 12 in. thick brick walls between concrete bays and a 4 in. concrete roof with slag surface. The basement floor is 120 ft. x 275 ft., and the second floor, which happens to be the ground floor, has a 15 ft. wide shipping platform along the entire 275 ft. side. This is enclosed by a lean-to roof and Kinnear doors and is heated by large unit heaters merely to a point above freezing. With the exception of a refrigerating room in one corner of the basement, this floor is heated to only 40°. A storage space 64 ft. x 72 ft. is heated to 70°. About two-thirds of the second floor is heated to 50°, and the balance, together with the entire third floor, is heated to 70°.

Two large traveling ovens contribute a good deal of heat to one end of this floor. The fourth floor is divided, the larger portion being heated to 40°, one-third to 70°, and a small amount to 85°. The fifth floor is heated to 40°, although some 1200 sq.ft. are heated to 70°. In addition to the main building, there is a smaller building, an auto repair shop, which is also heated.

The theoretical radiation for the main building figured out to 23,634 sq.ft. of steam, and the smaller building to 884 sq.ft., or a total of 24,518 sq.ft. Steam is supplied by three gas boilers having an American Gas Association rating of 8800 sq.ft. each, or a total of 26,400 sq.ft. In addition to the main heating plant, there are two 20 hp. high-pressure gas boilers for process steam, a gas water heater, and an all-gas cafeteria kitchen.

Practically every bit of gas burned in this building, whether for heating or for process work, is useful in supplying heat to the building. In the heating season 1928-1929, with 5477 degree days, the total gas for all purposes came to 31,359,000 cu.ft., of which about half was used by the boilers. In the season 1929-1930, with 5709 degree days, there was a total gas consumption of 31,530,000 cu.ft., of which a little less than half was used by the boilers.

New Heating Methods

In the gas heating field there has been developed an important new heating method. It has already received considerable publicity, but especially for industrial building heating it seems to be destined for very rapid growth. It is the gas unit heater, which differs from its companion steam unit heater in being a completely self-contained heating appliance, and with the exception of electric wiring and the gas pipe, requires no further equipment. The gas unit heater is really a *unit* heater.

Gas piping is inexpensive, and electric wiring need not be long, because there are naturally near by places for connection in any industrial plant. As a result, the unit heater may be placed anywhere at all where heat is desired, without regard to questions of steam circulation, cost of piping, insulation, traps, etc. With gas unit heaters, there need be no boiler, no stack, no accessories such as coal storage space, ash cans, coal handling equipment, no attendance is required, no regulation of water line, no maintenance in boilers, and then best of all, better than 90% of the heat is usefully recovered in the unvented type of unit heaters, and better than 80% for the vented types.

In a general article of this character, it is not possible to go into the details of the comparative first cost of any given installation, because each situation would naturally be different, but it does not take much imagination to picture the reduction in first cost

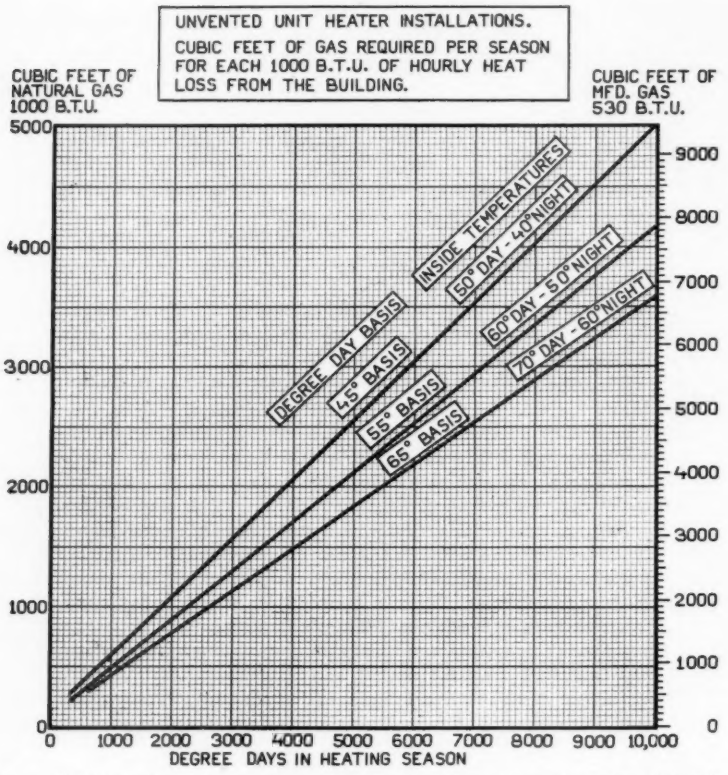


Fig. 4. Chart for estimating gas consumption of unvented unit heaters in industrial buildings

when using gas unit heaters compared to the standard radiation steam boiler, piping, and all the accessories are thrown in.

The high efficiency of the unit heater is continuous *regardless of load* for the self-evident reason that all of the heat liberated on burning the gas is directly available in the room. The only losses which exist are the flue losses, which amount to about 17% for the vented heater, and the loss due to uncondensed water vapor in the case of the unvented heater. There is a difference of opinion on the latter point, however, because in many cases where condensation on and frosting of roof monitors or skylights is not serious, some of the water vapor is condensed and a portion of the latent heat recovered. In any event, the minute that the desired temperature is reached, and the controls shut off the unit heater, there is no loss, because there is no fuel being burned, and there is so little heat stored in the unit heater itself that there is no off-period loss.

Gas unit heaters are available in a number of different styles and types. One of the first to appear on the market consisted of a forced air gas burner located underneath a bank of 80 chromium plated tubes. An electric motor operated the unit heater fan and extracted better than 80% of the heat of the gas burned from the tubular heating surface. When the fan was operating, the hand could be placed on the tubes in the upper section of the heater. Fig. 1 shows a typical industrial installation of unit heaters.

The second type of unit heater is generally similar in construction but has provision for the use of a multi-blade fan in place of the propeller type of fan, so that it can be used for duct distribution against positive resistance.

In addition to these types, there is a radical departure in a new unit heater which involves the use of revolving radiation in place of stationary radiation. This consists of a hollow-blade propeller fan so designed that the gas is burned inside of the hub of the fan wheel, and is discharged through the hollow blade into a shroud surrounding the wheel and thus discharged into the vent. The big advantage of this type of unit heater is the possibility that it can be operated in any position, horizontal, vertical, discharging air up or down, and oscillating in its motion.

The output and air capacity of gas unit heaters are given in Table 1.

Another type of factory heating with gas which is relatively new is by the use of gas-fired air heaters with suitable duct connections. Such units can be set anywhere in any available space, operating without attention and under thermostatic control. They do not need a separate boiler room, and can be put wherever convenient. Very often some of the air may be usefully employed for drying rooms, and in this way process heating air and also building heating air are secured. This type of heater may also be placed up in the air on an elevated platform, and the space below used for storage, driving machinery, or other industrial equipment.

A typical installation of this type of unit is shown in Fig. 2. This is an enclosed air heater for natural gas, used for a combination of building heating and drying. Since the drying air is vented into the room, all of the heat in the gas burned is ultimately available for building heating. It is difficult to give unit figures for this particular installation, because some of the heat was supplied by a large tunnel kiln with quite varying output. The general data for this building are as follows: 300 ft. x 280 ft. x 24 ft. high; modern type construction, having steel framing, brick walls, 60% glass surface, and built-up roof. Executive offices in outside bay on first floor occupied a space of 120 ft. x 20 ft. Heating requirements include building heating to 70° against an outside temperature of 0°, and to furnish large amounts of drying air at 160°.

There are five of these units in this plant supplementing the heat derived from the tunnel kiln. Waste heat from the kiln is collected by means of a piping system, drawing it to a mixing chamber where additional air brings the temperature to the desired level. A fan draws the air, distributing it through ducts to the various parts of the building for heating and

drying. Connected into this supply system are the five gas-fired heaters, so designed that when the kiln is not operating, the gas heaters make up the heat requirements. Under full load conditions, about 45% of the air is required for drying and 55% for heating. Consequently, in the summer time a by-pass stack can be used to discharge a portion of the heated air directly out of doors.

It will be of interest to note the records of a number of different gas installations of the various types which have been mentioned.

Fig. 3 shows an installation of five boilers handling approximately 28,000 sq.ft. of direct cast-iron radiation in a hospital at Great Falls, Montana. The advantages of gas for large building heating could hardly be better shown than in this installation, where so large a quantity of radiation is handled noiselessly and without attendance in a compact boiler room. It is not possible in the short space of an article to do justice to the many interesting features of such an installation.

Since the interest of many readers of this article will center in the possibility of using gas in existing coal boilers, Fig. 6 is worth a moment's consideration. This shows the conversion of an 80 hp. triple pass boiler, fired with natural gas.

Methods of Estimating Gas Required for Factory Heating

If this article has aroused the interest of any reader in the subject of gas for industrial building heating, it will certainly have raised the question: How much gas is going to be required?

This is not an easy thing to answer, because there are more variables in industrial heating than in domestic heating which tend to upset the best of calculation. This has already been suggested in the several plants where process work contributed a large share of the heat. Fortunately, in the cases in question the amount of heat contributed by the process was well known, and could readily be allowed for in making heating estimates.

However, a method for making a heating estimate has been developed and is quite useful. Having made the estimate, the contribution of heat from process sources can readily be detected, and then the amount of fuel used for gas building heating properly estimated.

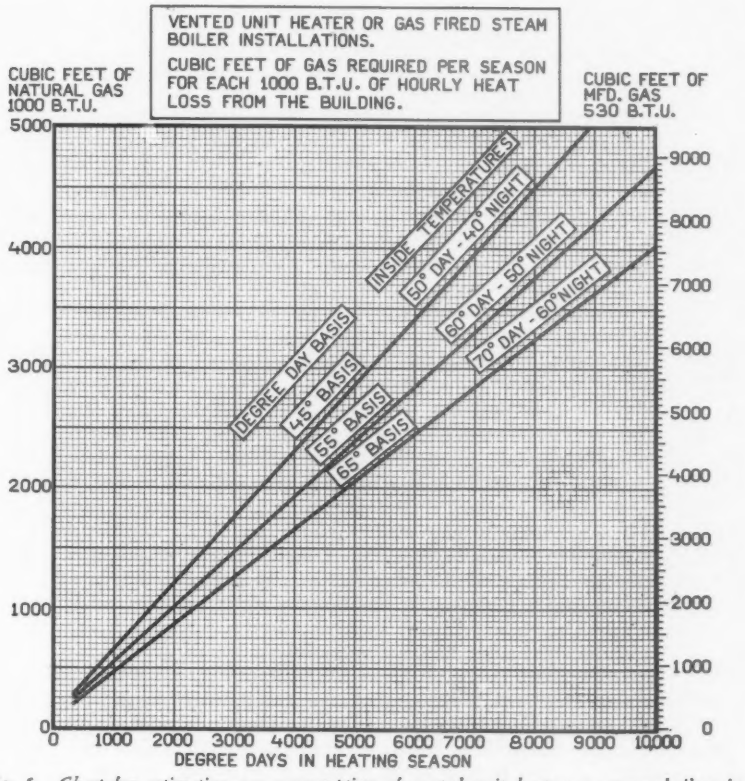


Fig. 5. Chart for estimating gas consumption of vented unit heaters or steam boilers in industrial buildings

Table 2 repeats some of the degree-day data recently given in full in this magazine for industrial heating. This is degree-day data for some leading natural gas towns based on a 45° and a 55° datum. This material is very useful where gas is the fuel.

Building Heat Loss

For industrial heating installations the heat loss is frequently figured on other temperature bases than 70° and 0°. For the purpose of illustration in this article, it is assumed that buildings are to be heated to 50°, 60° or 70°. The standard methods may be taken to arrive at the hourly heat loss of the building. The only difference in the calculation is to multiply the various coefficients by the corresponding temperature rise desired. This can be done even when different portions of a building are to be heated to different temperatures. Where this is the case, the internal heat interchange must also be calculated; that is to say, suppose a main portion of the floor is to be heated to 50°, while some small section used for office space, is to be heated to 70°. The heat loss for the 70° portion would be calculated in the usual way, but the wall dividing the 70° from the 50° portion would have a temperature differential of 20° to be used in determining the heat loss.

Data given in Table 3 are to be used in the method outlined in this section of the article to determine the annual fuel consumption. The details of this will be explained a little later. In the case of residence heating, a relationship was discovered showing that when the outside twenty-four hour average temperature fell below 65°, the usual household turned on its gas heating system. That is to say, approximately a 5° differential between the twenty-four outside temperature and the desired indoor temperature occurred before heating units were placed in operation. The similar relationship for industrial build-

TABLE 1
OUTPUT OF GAS UNIT HEATERS

Make and Model	B.t.u. Input per Hour	B.t.u. Output per Hour	Equivalent Sq.Ft. of Radiation		Cu.Ft. per Minute Heated Air	Temp. Rise of the Air	Type of Fan	H.P. of Fan
			Vented	Unvented				
Buffalo Forge Co.	150,000	120,000	500	563	2,300	48°	3 blade	—
Columbus Heating & Ventilating Co.								
Columbus No. 150	180,000	150,000	625	675	2,400	57°	4 blade propeller	1/6
							multi-blade	1/2
Columbus M 2000	240,960	200,000	833	937	4,000	46°	multi-blade	3/4
Columbus M 3000	361,445	300,000	1,250	1,351	5,500	50°	multi-blade	1
Columbus M 4000	481,930	400,000	1,666	1,810	7,500	49°	multi-blade	1 1/2
Columbus P 2240	240,960	200,000	833	937	3,000	61°	propeller	1/3
Columbus P 3300	361,445	300,000	1,250	1,351	4,500	61°	propeller	1/2
Columbus P 4360	481,930	400,000	1,666	1,810	6,000	61°	propeller	3/4
General Gas Light Co.								
Humphrey 100	100,000	83,000	346	375	1,900	40°	4 blade 1 1/8" P.	1/6
					1,780	43°	6 blade 1 1/2" P.	
					1,400	47°	6 blade 2 1/2" P.	
Humphrey 200	200,000	166,000	692	750	2,600	50°	6 blade	1/4
Texo Heater & Mfg. Co.								
Sterling 4	125,000	100,000	417	470				1/12
Sterling 5	156,000	125,000	520	585				1/6
Sterling 6	230,000	184,000	757	862				1/6
Sterling 7	335,000	268,000	1,120	1,250				1/4
Sterling 8	417,500	344,000	1,430	1,570				1/3
Sterling 10	536,000	428,000	1,780	2,000				1/3
Sterling 12	670,000	535,000	2,230	2,500				1/2

ing heating has not yet been ascertained. Therefore, in the absence of definite information, the same differential will be assumed, although it is quite possible that this will have to be changed when more information is available. For this reason, the degree day table on a 45° and 55° basis corresponds to industrial building heating requirements of 50° and 60° indoor temperatures respectively.

Gas Requirements

Table 3 shows the B.t.u. required per degree day for each 1000 B.t.u. heat loss per hr. from the building. The table is worked out for various combinations of temperature inside and outside maintained for varying periods of time. In the case where different temperatures are maintained day and night, allowance has been made in the figures for the fact that Sunday and holiday temperatures will probably be the same as the night time temperatures. If the proposed temperature conditions are different from the tabular values, it is quite easy to make the corresponding percentage correction. These figures are given for efficiencies from 75% to 100%, so that for any given situation a choice of the data is necessary. These figures are used as follows:

First find out how many B.t.u. are lost per hour from the building under the desired conditions. Then multiply this by the number of degree days (on the proper basis to correspond to the desired building temperatures), and again by the constant selected from the table and divide this product by the B.t.u. per cubic foot of the local gas. The result will be the estimated consumption in cubic feet for the season.

This is a relatively simple method, but it is necessary to select the correct efficiency, and also to be careful in

TABLE 2
INDUSTRIAL DEGREE DAYS IN VARIOUS CITIES SUPPLIED WITH NATURAL GAS

City	Degree Days	
	45° Basis	55° Basis
Cincinnati, Ohio	1376	3003
Cleveland, Ohio	1525	3795
Denver, Colo	1548	3440
Kansas City, Mo	1463	2980
Memphis, Tenn	....	1284
Oklahoma City, Okla	600	1835
Parkersburg, W. Va	1147	2784
Pittsburgh, Pa	1377	3028
Rapid City, S. D.	2590	4628
Salt Lake City, Utah	1475	3202

TABLE 3
B.T.U. REQUIRED PER DEGREE DAY FOR EACH 1,000 B.T.U. OF HOURLY HEAT LOSS* FROM INDUSTRIAL BUILDINGS†

Daytime Inside Temperature	Minimum Outside Temperature	Time in Hours	Degree Day Datum	Efficiency			
				75%	80%	85%	90%
70	0	24	65	480	450	424	400
60	0	24	55	568	532	501	473
50	0	24	45	694	651	612	578
70		16					
60	0	8	65	457	429	403	381
70		10					
60	0	14	65	440	412	388	366
60		10					
50	0	14	55	509	477	450	424
50		10					
40	0	14	45	607	569	506	456

*Heat loss figured to maximum inside temperature corresponding to desired estimate.
†Sunday and holiday temperatures assumed the same as the night temperature.

dealing with problems where different portions of the building are to be kept at different temperatures. The recommendation would be as follows:

A figure of 80% efficiency is a safe one to use for estimates with steam boiler plants or vented unit heaters. For unvented unit heaters, the figure of 90% is the proper one to use. For converted installations, a 75% figure will be reasonably safe.

In the case where the temperature has to be different in different parts of the building, the estimate should be made for each portion as if it were a separate heating plant.

Where the number of degree days is small, the efficiency will drop off in the case of steam boilers, because of the relatively long "off periods." Although it is difficult to state just where the line is to be drawn, it is probable that for territories between 1000 and 3000 degree days on a 70° basis, or up to 2000 degree days on a 60° basis, will run efficiencies as much as 10% lower than the values given. On the other hand, most of these southern localities do not calculate with 0° as the minimum outside temperature.

This problem is not very serious, as has been mentioned before, because the ventilation in most industrial buildings is rather high. There is some possibility, though, of causing frosting, especially on the roof. To overcome this, it has been suggested that a suitable elbow on top of the unit heater flue connection could deflect the flue gases in such a way that they will be caught by the air blast through the heater. This would mix them with the heated air and dilute them, at the same time usefully employing the heat which they contain. Since they would not collect directly under the roof, the chance for condensation trouble is pretty limited. There is no danger of raising the humidity of the room air above 40% to 50% relative humidity, because the natural ventilation will keep the relative humidity below this amount. In the case of a piece of equipment of this kind, it will be necessary to design it so that it would not produce an undue pull on the gas flames.

The two charts are for the purpose of short-cutting the steps which have been outlined in the method for estimating gas consumption. One chart is for use with vented unit heaters or gas-fired steam boiler installations, and the other is for unvented unit heater installations.

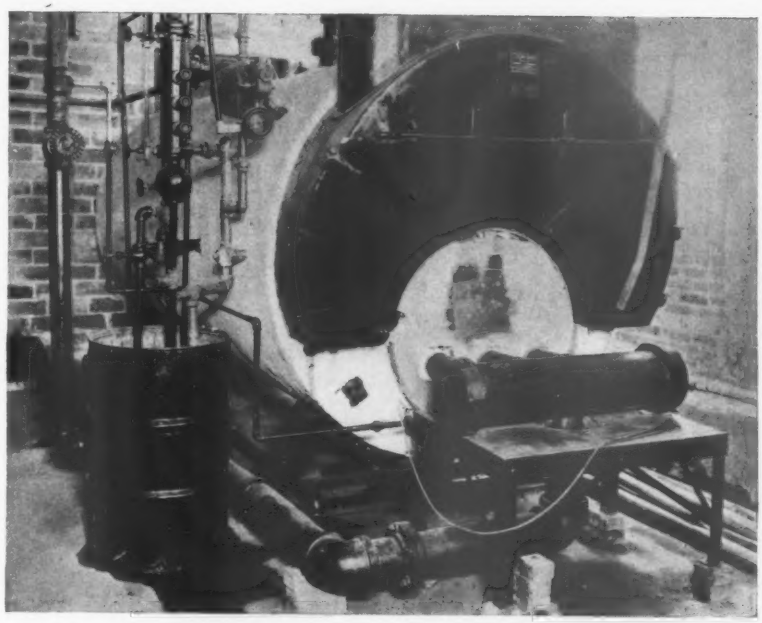


Fig. 6. View of 80 hp. gas-fired boiler showing burners, manifold and Mercoid switch for controlling water level

The charts read directly in cubic feet of natural gas per season in the left hand scale, and in cubic feet of manufactured gas per season in the right hand scale.

It is only necessary to extend a line from the proper number of degree days to the curve which represents the operating conditions of the plant, and then the cubic feet of gas required per season for each 1000 B.t.u. of hourly heat loss from the building can be read.

Suppose, for example, that it were desired to check the industrial plant estimate worked out with a different method in the 1930 report of the American Gas Association House Heating Committee. The report indicates that a given building had 715,000 B.t.u. loss per hr. when the inside temperature was to be maintained at 60°. Sundays and holidays and nights (14 hours out of each day) a temperature of 45° was to be maintained, and there were 4122 degree days on the 55° basis.

Using the steam boiler chart, we find that exactly 2000 cu.ft. of natural gas are required per season for each 1000 B.t.u. of hourly heat loss. Therefore, the building heat loss for the season is 2000 x 715, or 1,430,000 cu.ft. Since the temperature was to be 45° at night instead of 50° as indicated on the chart, this corresponds to about 14% decrease. This would bring the annual consumption to 1,230,000 cu.ft., which checks the estimate of 1,235,000 by the other method.

Conclusions

Summarizing the picture of gas for industrial building heating, the following general conclusions are found:

First, the gas-fired unit heater offers exceptional advantages for lower first cost installations and for bringing the cost of gas to figures not very different from the cost of competitive fuels. Moreover, the general practice of gas companies is to service and maintain such equipment.

Second, where rates are attractive, standard forms of radiation connected to gas boilers are growing in popularity. Here, too, the gas company undertakes the problem of service, so that the plant owner has an entirely automatic heating equipment, free service, and no smoke, ashes or dirt to contend with.

Affiliated Association Activities

Public Utility Association Secretaries

AT the annual conference of public utility association secretaries, held in Cleveland, Ohio, December 1 and 2, John Lapham, of Minneapolis, Minn., was elected president and A. G. Schroeder, of the Michigan Gas Association, secretary. A feature of the program was an address by Alexander Forward, managing director of the American Gas Association, on "Matters of National Importance." Mr. Forward painted a vivid picture of what is happening in the gas industry, indicating the manner in which the secretaries might help to further the interests of the industry.

In an address, "Government in Business," Edward F. McKay, manager of the Oklahoma Utilities Association, gave a complete review of the status of the public ownership situation.

The secretaries were given some unusual and promising ideas on convention programs from the viewpoint of a member by G. I. Vincent, of Syracuse, N. Y.

On the afternoon of the first day a visit was made to the A. G. A. Testing Laboratory, and on the following afternoon an inspection was made of the N. E. L. A. Park Laboratories.

On arrival at the A. G. A. Laboratory the visitors were told of the history and purpose of the institution by Mr. Forward and R. W. Gallagher, president of The East Ohio Gas Company, and by G. W. Allen, secretary of the Canadian Gas Association. The various branches of the Laboratory's activities were outlined by the following members of the Laboratory staff: Dr. F. E. Vandaveer, laboratory supervisor; John Corsiglia, chief engineer; K. R. Knapp, research engineer, and K. H. Flint, chief inspector. The afternoon's program at the Laboratory was concluded by an inspection trip through the building, during which the various phases of the work being carried on were explained.

Maryland Utilities Association

THE Maryland Utilities Association, recently affiliated with the American Gas Association, was organized in 1923 for the purpose of developing the public utility industry in order to foster the common interests of members and serve the best interest of the public; to render assistance in increasing the availability of utility service, encouraging fullest utilization; and to secure the promulgation of uniform and just rules and regulations, equitable to the utilities and to the public served, and to render such assistance and advice to members consistent with that purpose. Its membership is composed of public utilities operating in Maryland and the District of Columbia. Two meetings are held each year—the annual meeting in March or April, at which officers are elected for the ensuing year, and a mid-year, or Fall meeting in September.

R. E. Town

At the first meeting of the board of directors held after the annual meeting, chairmen are appointed for the various groups, the association being divided into three groups—electric, gas and transportation.

The association is a member of the American Electric Railway Association and is affiliated with the National Electric Light Association as well as the American Gas Association.

Officers for the current year are R. E. Town, Potomac Edison Company, Frederick, Maryland, president; Adrian Hughes, Jr., United Railways & Electric Company of Baltimore, vice-president; F. A. Mitchell, Eastern Shore Public Service Company, Salisbury, Md., treasurer, and D. E. Kinnear, United Railways & Electric Company, Baltimore, secretary.

Illinois Gas Association

THE Illinois Gas Association will hold its annual convention jointly with that of the Illinois State Electric and Illinois Electric Railway Associations in Springfield, Illinois, on March 12 and 13, according to announcement of Secretary George Schwaner. The first day will be devoted to a joint session in the forenoon and separate sessions for each association in the afternoon. The second day will be given over entirely to a "rural conference."

Connecticut Association Elects Officers

THE following officers were re-elected by the Connecticut Gas Lighting Association at a meeting held in Hartford, November 21, 1930:

President, George S. Hawley, president Bridgeport Gas Light Co.; vice-president, Andrew J. Sloper, president New Britain Gas Light Co.; secretary, E. E. Eysenbach, president Hartford Gas Co.; treasurer, C. L. Campbell, secretary and treasurer Connecticut Light & Power Co.; assistant-secretary, T. R. Sucher, secretary and treasurer New Haven Gas Light Co.

Executive Committee—The officers and H. R. Sterrett, vice-president, New Haven Gas Light Co.

New England Gas Association

JUDGING from the tentative program for the annual convention of the New England Gas Association, which will be held at the Hotel Statler, Boston, Mass., February 4 and 5, as announced by C. D. Williams, executive secretary, this gathering of the New England gas fraternity promises to be unusually interesting. Speakers of national prominence have been selected and most acceptances received, but their names will be announced later.

The tentative program follows:

February 4th—Morning

Announcements by President.

Reports of Board of Directors, Executive Secretary, Treasurer and Special Committees:

(a) Publicity Conference.
(b) Liquefied Gases.
(c) Group Insurance.
(d) Water Corrosion.

Election of Officers.

N. E. G. A. Sales Awards.

President's Address, H. Vittinghoff.

"The Commercial Manager's Opportunity Among Women's Organizations" by a nationally known woman economist.

February 4th—Afternoon

"Your Safeguard Against Socialism" by a nationally known Business Magazine Editor.

"Utility Relations," C. E. Paige, President of the American Gas Association.

(1) Customer.
(2) Employee.
(3) Organization.
(4) Public.

"Taking Antagonism Out of Customer Contacts," Dr. H. R. Halsey, New York, N. Y.

February 5th—Morning

Presentation of the N. E. G. A. Report on "Consumer Gas Acceptance" by J. David Houser and Associates.

The Consumer Survey in Gas Sales Management, an interpretation by a nationally known Professor of Marketing.

"Liquefied Gases, A Mutual Problem" by a foremost refinery expert.

February 5th—Afternoon

The Use of Heavy Oils for Carburetting.

Accounting Trends in the Industry.

"Is There a Moses Among You?" an appeal to patriotic self-interest by the managing director of a national trade organization.

The banquet will be held on the night of February 4 for which some unusual entertainment is being arranged.

Personal and Otherwise

Arthur E. Dietrich, New England sales manager of the Pittsburgh Coal Company, is in charge of the new Boston office of that company.

John Collins, Jr., was appointed chief engineer of the Standard Management and Operating Corporation, according to a recent announcement. In this capacity, Mr. Collins will be in charge of all construction and engineering enterprises performed by the company for Pacific Public Service and its subsidiaries. He formerly was connected with the New York offices of the United States Engineering Corporation.

John Collins, Jr.

J. M. Loyd has been appointed auditor of the Natural Gas Corporation of California, Natural Gas Corporation of Oregon and Natural Gas Corporation of Washington.

C. H. B. Hotchkiss, professor of heating and ventilating at Purdue University, has been made editor of *Heating and Ventilating.*

Richard E. Weeks, formerly of the Long Island Lighting Company, now is connected with the Wilmington Gas Company, Wilmington, Del., as special representative of the Standard Gas Equipment Company.

A. E. Strong, general superintendent of Coast Counties Gas & Electric Company, will be affiliated temporarily with the natural gas properties under the direction of the Standard Management and Operating Corporation of San Francisco, Calif.

Joseph A. Foster, of Abbott Run, R. I., is president, treasurer and active manager of a new corporation, the Rhode Island Natural Gas Company, Providence, R. I.

Charles T. Aaron, president of the National Gas Appliance Manufacturers Association, has resigned as executive vice-president of the Beckwith Company in Michigan.

C. J. Smith, who was formerly working under the Kopper's Research Corporation, now is with the Western Gas Construction Company at Fort Wayne, Ind.

J. F. Weideman, formerly manager of the Delphos Gas Company, now holds a similar position with the Iron Mountain Gas Company, Iron Mountain, Mich.

Mike Adams, formerly associated with the Metric Meter Works, has joined the Pittsburgh Equitable Meter Co. and will be located at Pittsburgh, Pa.

A. Mould has become purchasing manager for three allied utilities—the Rushville Gas Company, the Central Fuel Company and the Eastern Indiana Gas Company at Rushville, Ind.

E. N. Brickey, formerly in the sales department in the Gilroy district of the Coast Counties Gas and Electric Company, has been transferred to the Santa Cruz district in the capacity of assistant industrial gas engineer to W. R. Thayer.

V. L. Board, general superintendent of the Public Service Company of Colorado, has been elected a vice-president of the company.

Jerome L. Wiener, formerly vice-president of the Cabranette Corporation, Michigan City, Indiana, has been made president of that company.

E. M. Lindsay has been appointed general superintendent of Natural Gas Corporation of California, Natural Gas Corporation of Oregon, and Natural Gas Corporation of Washington. This puts Mr. Lindsay in charge of the complete organization and operation of the operating departments of these companies. He previously was connected with Standard Management and Operating Corporation.

E. M. Lindsay

Miss Elner Martin has been appointed director of home economics of Natural Gas Properties, Inc., and its subsidiary companies on the Pacific Coast. Miss Martin is credited with being one of the leading home economists in the West.

Miss Elner Martin

Survey of State Laws

A SURVEY of state laws on public utility commission regulation in the United States, prepared by Bonbright and Company, Inc., is being distributed from Headquarters to American Gas Association Company members. Requests for additional copies of this interesting work should be addressed direct to Bonbright and Company, Inc., 25 Nassau Street, New York, N. Y.

Pipe Joint Research

THE reason for research work on pipe joints at the Testing Laboratory may not be entirely plain at first thought. However, a few statistics on this subject may tend to make it somewhat clearer. The distribution systems form a very considerable part of the investment of $3,000,000,000 in the manufactured gas industry in the United States. These systems in 1929 carried a total of nearly 600,000,000,000 cu.ft. of manufactured gas. If we assume that 5 per cent of this amount was lost through leakage, and this figure is probably quite conservative, we find the loss for a single year amounts to about 30,000,000,000 cu.ft. If now, through improved methods of new joint construction and more effective means of repair of leaks, the saving of a substantial proportion of this present loss can be effected, the need of more definite knowledge on the whole subject of pipe joints becomes self-evident.

The Laboratory's investigation of this subject now has been in progress nearly a year and a half and has been confined so far to joints used in cast-iron mains. While it is still far from completed, some important information has been secured. The problem has been divided into two main parts thus far. The first concerns itself with a study of the means of repairing leaking joints and a determination of the performance which joints so repaired will give under certain carefully worked out test conditions. The second consists of a similar investigation of new joints prepared in various ways and using different kinds of materials. The first of these is probably of the more immediate importance. It must be remembered here that the tendency toward higher distribution pressures constantly tends to increase the leakage from joints in service. At the same time the repairing of such leaks becomes more and more expensive due to heavier paving and growing traffic.

Tests were carefully worked out to which both new joints and repaired joints could be subjected. These were designed to reproduce as far as possible the conditions which such joints are required to meet in practice. For instance, in one case, the joint was subjected to lateral bending to duplicate to some extent the effects of unequal ground settlement. In another, the effects of underground seasonal temperature changes which tend to set up alternate tension and compression upon a joint were reproduced.

Suitable arrangements were made with university laboratories for conducting most of such tests under our direction on machines commonly used for materials testing. So far work of this nature has been confined to Case School of Applied Science, in Cleveland, and the University of Pennsylvania, in Philadelphia, with satisfactory results. One of the greatest problems related to the satisfactory mounting of specimens. After this was satisfactorily carried forth, the actual testing was readily accomplished.

A large number of methods for effecting the repair of leaking joints, as well as many types of new joints, have been investigated and the results reported to the Pipe Joint Research Committee.

A number of other important angles relating directly to this subject have also developed. One of the most interesting of these is a study of the intensity of vibration on street mains due to traffic. Observations thus far made show that such vibrations may be detected and data are now being secured on the extent of such vibrations at several different locations under different conditions of traffic, kinds of paving and depth and size of main.

In addition to the original program upon which work is begun, arrangements since have been concluded to carry on tests on certain patented joints for the Cast Iron Pipe Research Association. This work is being conducted along lines somewhat similar to those already described. Tests are being made to reproduce the effects due to ground settlement, temperature changes and other conditions. In addition, a detailed program of tests is under way on the performance of different joints in which the gaskets are in direct contact with condensation from manufactured gas.

It has been noted that different new aspects of this subject have appeared continually since the time active work was first begun. So far most of the attention has been devoted to bell and spigot type joints. It is expected that the scope of the investigation will be broadened as it progresses so that finally all kinds and types of joints will be included. Necessarily, this is a somewhat slow process and considerable time is required to obtain conclusions upon which reliance may be placed. It is hoped, however, that it will finally be possible to cover the entire subject in such a way that a considerable saving may result to the entire industry from the information obtained.

Pacific Coast Testing Station To Open at Early Date

ANNOUNCEMENT was made last month by the Managing Committee of the American Gas Association Testing Laboratory that the Pacific Coast Preliminary Testing Station will be located at 716 Towne Avenue, Los Angeles, Calif., a lease on that property having been approved and executed.

The new testing station will be in charge of W. M. Couzens, who has been stationed at the Cleveland Laboratory for some time.

Much of the equipment for the Los Angeles station already has been shipped from Cleveland and it is expected by R. M. Conner, managing director of the Testing Laboratory, that the station will be in full operation at an early date.

Southern California gas companies and the manufacturers of domestic gas appliances in that territory have cooperated in a large measure with the American Gas Association in order to expedite the work preliminary to the creation of the new station.

The Pacific Coast Gas Association also has given whole-hearted support to this undertaking. R. E. Fisher, president of the Pacific Coast Association, has appointed a committee composed of members of the board of directors of his organization to assist the A. G. A. Laboratory staff in successfully launching the work at Los Angeles. This committee includes J. P. Coghlan, second vice-president of the Pacific Gas and Electric Company; E. L. Payne, manager of the Payne Furnace and Supply Company, and Clifford Johnstone, managing director of the Pacific Coast Gas Association.

Home Service Activities

Committee Outlines Work

Miss Karen Fladoes

MISS KAREN FLADOES, of the Equitable Gas Company of Pittsburgh, who is chairman of the American Gas Association Home Service Committee for 1931, presided at a meeting of that group held in Pittsburgh on December 5.

This year, Miss Fladoes said, carries over from last year the revision of the Home Service Manual which the committee plans to issue in a series of five pamphlets to be available to all Home Service departments and others interested.

A booklet on "home contacts" is being worked on first, because it seems most urgently needed and should be first in the hands of home service women. Other booklets include—"Aims and Organization of Home Service," "Inside Activities," "Outside Activities," and one on "Publicity and Radio Work."

Miss Hulda Ungericht is chairman of the group working on "Home Calls"; Mrs. Lyda Flanders, on "Aims and Organization"; Mrs. Ella Lambert, on "Outside Activities"; Miss Jane Wagner on "Inside Activities," and Miss Kathleen Atkinson, "Publicity."

Home service departments feel that to strengthen their position in their respective companies, they need a better understanding of inter-department relations. Therefore, a committee, under the chairmanship of Miss Jessie Read, of Toronto, Canada, will undertake this study. P. D. Warren, as chairman of a committee last year which worked on the problem of increasing the per cent of contacts that a home service department may make with the public, will continue this study.

Miss Ruth Soule will head a committee to further cooperate with educational institutions which desire assistance from the gas industry in the matter of information as to the use of gas and gas appliances.

Mrs. Luella Fisher will act as chairman of the Publicity Committee with Mrs. Ethel LaCour of *Natural Gas,* Miss Agnes Gleason of the *American Gas Journal,* and Miss Charlotte Hood, of the *Gas Age-Record,* as co-workers.

Research studies will have as chairman N. J. Reiff, of the American Gas Association Testing Laboratory.

There has been considerable growth in the representation of home service on the program of regional sales conferences and regional groups. To further this movement C. C. Curtis will head a committee of members from various sections of the country.

By JESSIE McQUEEN
Home Service Counselor
American Gas Association

In many ways Home Service is undergoing a change,—not only in activities undertaken, organization of work, acceptance in the communities served, but also in greater recognition in the gas industry. A committee headed by Miss Elsie Hinkley will work on the subject of "Development of Home Service" and attempt to formulate further programs of work.

Those attending the meeting in Pittsburgh were as follows:

Karen Fladoes, chairman, Equitable Gas Company, Pittsburgh, Pa.; Jessie McQueen, secretary, American Gas Association, New York, N. Y.; Mabel C. Atwood, Grand Rapids Gas Light Company, Grand Rapids, Mich.; Kathleen Atkinson, Providence Gas Company, Providence, R. I.; K. M. Clark, Ruud Manufacturing Company, Pittsburgh, Pa.; Luella Fisher, Eriez Stove & Mfg. Co., Erie, Pa.; Lyda Flanders, Worcester Gas Light Co., Worcester, Mass.; Ruth Kleinmaier, Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.; Ethel LaCour, Natural Gas, Cincinnati, Ohio; Ella L. Lambert, Milwaukee Gas Light Company, Milwaukee, Wis.; Edith J. Lloyd, Philadelphia Gas Works Co., Philadelphia, Pa.; Dorothy Shank, American Stove Company, Cleveland, Ohio; Ruth Soule, Brooklyn Union Gas Co., Brooklyn, N. Y.; Ada Bessie Swann, Public Service Electric and Gas Co. of New Jersey, Newark, N. J.; Hulda Ungericht, Ohio Fuel Gas Company, Columbus, Ohio, and P. D. Warren, Peoples Gas Light & Coke Co., Chicago, Ill.

Guests included G. E. Whitewell and G. W. Ousler of the Equitable Gas Company.

Gasettes

THE Home Service Department of the Philadelphia Gas Works Co. has created an interesting contact with the association of Architects and Builders in Philadelphia. Mrs. Edith Lloyd, the home service director, offered the association her assistance in the making of kitchen plans and in one year, at the request of architects, helped to outline the plans of sixty-three kitchens around the city.

The Brooklyn Borough Gas Company, Coney Island, N. Y., has won nationwide recognition for its kitchen planning service. In the May issue of the A. G. A. MONTHLY was described the "Kitchen Practical" designed by Dr. Lillian Gilbreth, a household engineer, at the request of Miss Mary Dillon, president of the Brooklyn Borough Gas Company.

This last year, Miss Jane Callaghan has carried further this work in designing outlines for work spaces and heights in kitchen equipment and had her exhibit on display at the exposition of the Women's Arts and Industries in New York City during September. Both the "Kitchen Practical" and the kitchen measurement service are on display at the Brooklyn Borough Gas Company Building, Coney Island.

The Home Service Department of the Central Hudson Gas and Electric Corp. in Poughkeepsie, also is giving assistance to their customers in their kitchen planning work.

The Philadelphia Gas Works Company has an interesting and instructive movie called "The Ghost in the Crucible." Mrs. Edith Lloyd, home service director is kept busy with requests from science classes in the public schools to display this movie. The pictures show the manufacture of gas and its many uses in everyday life.

Forty-eight Home Service Directors of New England met in Boston, November 21, for an all-day meeting. At noon they were entertained at luncheon by the Boston Consolidated Gas Company, of which Miss Daurice Darling is the home service director.

Constructive talks on their impressions of home service activities were given by W. C. Beckjord, vice-president and general manager of the Company; F. D. Cadwallader, vice-president in charge of sales, and J. J. Quinn, assistant to the vice-president in charge of sales.

The Southern Counties Gas Company of California has recently installed a chain of model kitchens in some of its larger district offices throughout Southern California. Four of these kitchens already have gone into service and operated sufficiently long to establish their value at Santa Monica, Whittier, Santa Ana and Monrovia.

Publicity and Advertising Section

DONALD M. MACKIE, Chairman ALLYN B. TUNIS, Secretary WILLIAM H. HODGE, Vice-Chairman

The Leaven of Progress*

Keith Clevenger

By KEITH CLEVENGER

Director of Advertising and Publicity, American Gas Association

GREAT as are the natural resources of this country of ours, and the gas industry is charged with the development, conservation, improvement, economic and efficient preparation, transportation and distribution of one of the most important of these—our fuel resources—the greatest problem of our business, as well as all other lines of industrial and commercial activity, is to continue to train and equip men and women—our human resources—today, for the responsibilities of tomorrow; help them to be ever alert to the ferment and the change that is going on in the commercial and industrial leaven we call progress.

"Whirl is King" said an Athenian more than two thousand years ago. "Nothing is fixed," everything is in a state of turmoil. That is the greatest truth regarding the present age, Daniel Willard, president of the Baltimore & Ohio, told a committee of economists in the course of testimony a few weeks ago.

"Who is there and where is he that can be sure of his status anywhere at any time? The whole thing is in a state of chaos." Continuing, Mr. Willard said: "I didn't realize that before six or seven years ago. I was in the habit in the twenty-five or thirty years of my experience of thinking that a railroad was a sort of static thing. It occupied the field of transportation and could not be replaced. While we might have bigger cars and heavier rails, the railroad system, after all, was a thing that was fixed. But I have learned that everything is subject to change and displacement. At Johns Hopkins University, they are trying to make synthetic wheat. Synthetic milk has been made. Who can say that synthetic gold will not be made so cheaply some day that gold as a basis of credit will be simply absurd? Anyone who thinks his status is static is asleep. . . . In the railroad business we have recently had the motor bus, but the motor bus is not so bad as these private cars—some twenty-one millions of them—which now crowd the highways. What will be the effect of these on private railway transportation no one can say. It was something we didn't foresee. And then has come the airplane. What else will come we don't know. So now instead of thinking in terms of how to make better engines on the railroads today our problem is: Do we want any engines at all?"

We have seen the great crude oil pipe lines constructed until they form a network of underground transportation throughout the length and breadth of this nation; we have seen natural gas pipe lines push out 100's, yes, in excess of 1200 miles, in the past two or three years, where heretofore lines extending a matter of 300 or 400 miles were considered remarkable. This, the most efficient, cleanly, and flexible of all natural fuels, is pushing into the population and industrial centers of the East, the North, the South, the West, in fact every section of the country, bringing a new competition—undreamed of a few years ago—to the coal and the oil industry, and even to the manufactured gas industry, which has been through one complete revolution in the past quarter of a century, when it had its basic load—illumination—taken away from it by the electric incandescent lamp, and had to reconstruct its business as an industrial, commercial and domestic heating and cooking agency.

Lines, underground, are now being constructed from the oil and gas fields of Oklahoma, and Texas, to carry refined gasoline to Eastern markets.

In the chemical laboratories of most of our major petroleum companies those two formerly unruly hydrocarbons, butane and propane, that gave motor fuel the backfire, the sputter, and the carbon deposit, have been experimented with for the past eight or ten years, and today they are removed from the motor gasoline, liquefied and sold as "bottled" or "cylinder" gas, for industrial, for commercial, for domestic heat, and this business is growing rapidly as a most healthy competitor not only of solid fuels, but also of manufactured and natural gas. And is "whirl king"?

Less than 100 years ago only about one-half of the tillable land of America had been brought under cultivation. Today there remains but relatively a small per cent of tillable land open to settlement. The era in which we now live is, for some of us, but one generation removed from the pioneers who wrested the soil from the wilderness. The oft-told tales of the grasshopper scourge, the droughts of the seventies and eighties, the hardships and starvation task of taming the prairies, and the swamps of our great mid-west and western territory were the bedtime stories for many of us in our childhood. This was the age of the farmer, the miner, the lumber king, the railroad builder, all of those who in some way had a part in the development of the production of the soil—an age of individualism. Then came the telegraph, the telephone, and lately the radio, the motor car and the airplane, all bringing together within a period of a few minutes or hours, the two extremes—the virgin West and the older, more settled East—into a proximity, an intimacy, for which neither by the nature of their development were prepared. In the middle west and the extreme west, it was the age of individualism—in the east already the germs of corporate thought and activity had impregnated the industrial and commercial life. Hence, before much of the country was prepared for it, we were in the next stage of national development, before the growing pains of our individualistic adolescence had entirely subsided, i.e., the era of combinations of capital, of mergers of physical assets and consolidation of management—Big Business with two capital B's. And again we might ask ourselves, "Is Whirl King?"

Lack of understanding, the disparity of economic interest between the several sections of the country, despite the new means of communication which had literally wiped out distances, the political machinery of the Nation, which has always been and probably always will be in great degree in the rear guard of the march of economic progress, all whispered to us that Big Business, Trusts, Combines and Mergers were wicked, stiflers of individual initiative and oppressors of The Peepul. The Great War taught us the value of coordinated action, large scale financing and operations—it brought East and West, and North and South together into a defensive unit on such a scale as the world has never before seen. It taught us that in the same manner we might better win our economic battles, which are no longer local and sectional affairs, but world-wide in their varied aspects. We have seen the great consolidations of capital in the railroad business, the steel industry, the utility industry, the publishing business, the food products industry— tin cans by the billion, bringing food already prepared for milady's table direct from factory to consumer without the touch of human hands; and now it's farm consolidation. A Kansas corporation has merged hundreds of small farms over a stretch of 150 miles, and local bank-

* From an Address before the Outdoor Advertising Association of America, Milwaukee, Wis., Oct. 23, 1930.

ers are complaining bitterly. Tractor plows run night and day and fleets of "combines" harvest grain as fleets of motor trucks rush it to the market. Mr. Willard sounded the warning to all of us, if you will pardon repetition, when he said, "But I have learned that everything is subject to change and displacement." Veritably, "Whirl is King."

While we are still puzzling over this present age of "Merger and Combine" the economic and financial interlocking allied interests in every field of industrial and commercial activity, and in some quarters struggling with Quixotic if honest unavail against the windmills of modern progress, the next tremendous business stimulus of the future is taking place right under our noses. We are just at the eve, if our feet are not actually over the threshold, of the next cycle in our economic progress—the age of chemicalized prosperity, the development of synthetic production. Let me for a moment quote one of our leading financial and economic writers, who said just a few weeks ago: "The growing injection of synthetic chemistry into industry gives new importance to our vast natural resources. It tends to replace the low-profit raw-material industries with high-profit manufacturing ones. Not only will there be more and more of a demand for mineral and animal and vegetable materials that now have little or no commercial value, but the reclamation of waste materials will proceed apace"—from our coal, oil and gas resources we have already found all of the base constituents of all our major and many minor anesthetics, antiseptics, saccharine, commercial alcohol for perfumery, face lotions, etc., dyes, propane, butane, hexane, pentane and other hydrocarbons before mentioned; already a process has been developed and patented for the manufacture of ice by the chemical treatment of garbage; the National Lumber Manufacturers tell us that as much cellulose can be produced from one acre of mature forest as from 100 acres of farm land without depletion of the forest reserve, and so on *ad infinitum*—"More and more will the miner become a manufacturer, the forest industries will turn out more and more processed products and the farmer will be closely drawn into the industrial fold. From the standpoint of industrial chemistry" and the research laboratory "our natural resources are hardly scratched as yet, and their appraisal in future terms of future wealth is vastly greater than when their utilization consisted chiefly in physical treatment and transportation."

We are learning, for instance, that the value of the by-products of coal, oil and gas, offer far greater possibilities of future value than any of these natural products produce from their value alone as fuel. We are learning that if we are to meet the increasingly keen competition of world-wide industry, and at the same time retain and enhance the living standards of American workers—which must be done—we cannot depend alone upon our wealth of natural resources, upon the power of our financial institutions, nor yet upon the record of past industrial progress, but rather upon the derivation of every element of our raw production not necessary to its primary use and the application of all of those derivatives to the reduction of costs to the ultimate consumer, and the increase of profits for both the labor and capital concerned.

Are we aware of our relation as advertising advisors and salesmen to all of these activities which, in the name of Progress, are going on about us?

Are we constantly analyzing ourselves and our business to see that we are not merely keeping up with the line of march, but rather in our proper position—the front ranks of the procession, helping to herald and lead the way?

Are we satisfied with our methods of yesterday, or are we planning systematically and intelligently today for the innovations of tomorrow?

Are we awake to the changing modes of living, of travel, etc., to the changing standards of human desire—that the family who yesterday would have been satisfied with a six-room cottage, a garden plot and a cow, must have an eight- to ten-room house with all the latest in decoration, heating, lighting, and plumbing equipment, a snappy six- or eight-cylinder car—that they are already in the social competition with the Jones', the Jones' with the DeLancey's and the DeLancey's with the Van Stuyvesant's—MuchDough's, etc.?

Are we conscious of the fact that yesterday is dead, today is almost gone and tomorrow, just around the corner, is the day we should be working for?

Are we disposed to ascribe the present financial and business situation in which the country finds itself rather to our own lack of vision, the growing disposition on the part of all of us to live on Easy Street rather than on Hardwork Avenue—to take the business that dropped into our laps as a tribute to our commercial prowess and indispensability, rather than to plan and work for the development of it as a greater measure of service to a growing list of patrons? We are not experiencing a business depression so much as we are a business awakening—at least it will be a business awakening for those who have the ability to awaken to their opportunities, take stock of themselves, reduce their inventories of slothful practices and extravagant habits, move their base of operations from Easy Street to Hardwork Avenue, selling their goods or their service on their merits and their merits alone. For many it will be a hard fall from the lap of luxury to the toe of necessity, but that is all this so-called depression amounts to—getting back to a production and merchandising program based upon the real values to the public of the goods and the services we have for sale. Those who cannot make this readjustment will fall by the way.

Are we alive to the fact that our sales effort. and advertising is but the herald, the guide post of salesmanship—must be directed to the desires of people—desires for efficiency and profits in industry, meeting the competitors' line with a better product at equal or possibly less cost—desires for health, for beauty, for comfort, for added hours for leisure, for pleasure, etc., in the home life?

People are not interested in our business or service. They are interested in themselves—you and every other human being live entirely in your own desires. You lived in those desires and exercised them most tyrannically as an infant, before you could utter an intelligible word—those desires will be the last vestige of your personality that you will shed as the shades of mortality close about you. People are not interested in things, in products, they are interested in themselves. Every successful sales effort—and you are in the business of producing, selling, and maintaining an advertising medium which in turn must possess a definite and increasingly effective sales value, if you are to prosper—must, therefore, be constructed, not to create desire—it is already there—but to direct those desires to the thing or the service we have to sell.

We—the American Gas Association—maintain newspaper, direct-mail and outdoor advertising services for our industry along this same line of reasoning. They all have their place, in which each may be more efficient than any of the others, but no one of them is sufficient to itself, today, in the rush and hurly-burly of this complex modern life of ours. And none of them, nor all of them will bring us the results we wish unless we realize that in every phase of our sales and advertising effort we must be constantly catering to the desires of people.

In other words, that things have but little to do with the successful development of our business. The natural resources of America were the same hundreds of years before its discovery—the influence that has made them valuable has been the application of the increasing knowledge of men and women to the greater development of these natural resources—these physical things and forces. So it is with our business—yours and mine—the application of our knowledge, plus all we can gather by research and study, plus a sincere interest in making our business render an increasing measure of service to mankind in the pursuit of his desires in this ever-changing world of ours.

Verily, "Whirl is King." And we are charged with the responsibility, and enjoy the opportunity of keeping this influence, which could easily result in social chaos and political anarchy, revolving in ever-increasng circles of constructive achievement and helpful service to man.

Natural Gas Department

H. C. MORRIS, Chairman — E. J. STEPHANY, Secretary — H. C. COOPER, Vice-Chairman

Program of Conservation Outlined by Committee

E. J. Stephany

By E. J. STEPHANY

Secretary, Natural Gas Department, American Gas Association

THERE was held in St. Louis, Mo., last month a meeting of our Main Technical and Research Committee which may represent the most important epoch in our Association work for the natural gas industry. At this meeting a program in connection with Natural Gas Conservation was outlined. This is undoubtedly the biggest and most far-reaching activity which the Committee has planned. The work will deal largely with matters of production, but will also concern itself with transmission, distribution and utilization. Several additional sub-committees will be appointed. It should be pointed out at the very start that conservation as used by this committee does not mean hoarding, but rather the wise use of natural gas and the elimination of unnecessary waste.

The Gas Measurement Committee has completed and made available its Report No. 1, but this committee is continuing its studies with particular reference to the effects of pulsations on gas measurement. Special attention is being given to compressor stations.

The Pipe Line Flow Committee will have an important report to present within a short time. The Committee on Gas Well Deliveries, which has been making an intensive study of the determination of gas well delivery capacities without blowing wells wide open to the atmosphere, will aggressively continue this study and the committee's work will doubtless be extended to include consideration of many other problems in connection with the production of natural gas.

There recently has been appointed an Advisory Committee on Natural Gas Home Study Course, consisting of the following members:

J. D. Creveling, Henry L. Doherty and Company, New York, N. Y.

F. L. Chase, Lone Star Gas Company, Dallas, Texas.

A. B. Macbeth, Southern California Gas Company, Los Angeles, Cal.

J. B. Garner, Hope Natural Gas Company, Pittsburgh, Penn.

The course is being prepared under the direction of Professor C. M. Young of the University of Kansas, Lawrence, Kansas. This work is now well under way.

The Association's Course in Sales Administration and Management in the Gas Industry has recently become available. It is designed for executives in charge of sales and all others having any part in sales administration and management. The registration fee is $50 per course. This new course follows the courses in Domestic Gas Salesmanship, Industrial Gas Salesmanship and Employee Customer Relations, previously announced.

The following publications of the Bureau of Mines will be of interest to some of our members.

Bulletin 323, "Gas-Lift Method of Flowing Oil Wells" (California Practice). Obtainable from the Superintendent of Documents, Government Printing Office, Washington, D. C., at a price of 30 cents.

Bulletin 322, "Effect of Vacuum on Oil Wells." Obtainable from the Superintendent of Documents at a price of 35 cents.

Report of investigations 3035, "The Recovery of Oil from Sands the 'Gas Drive.'" Obtainable from the Bureau of Mines at no charge.

Proceedings of the 1930 Natural Gas Convention are available at Association Headquarters. Attention is also called to the fact that copies of the 1929 Proceedings still are available. These Proceedings contain a large amount of information which will be valuable for reference purposes.

Commercial Section

E. R. ACKER, Chairman J. W. WEST, Jr., Secretary SAMUEL INSULL, Jr., Vice-Chairman

Value of Public Relations in Selling Gas Appliances*

By HENRY OBERMEYER
Consolidated Gas Company of New York

IN order to sell appliances, we have to meet the public. There is no way out of it. There never was. The difference today, if there is any, is—not only have we got to meet them, but we have to meet them more than halfway. The matter of public relations, or good will, or satisfying the customer—call it anything you please—has become so important that it is not a question any longer how valuable public relations can be in helping you to sell gas appliances, but rather how well you can sell gas appliances in order to improve customer relations. The emphasis has, very rightly in my opinion, come back to the fundamental aspect of our business—the main reason why we are in business, in the first place—which is, namely, to give satisfactory service. We went into the appliance business originally simply because we found it was necessary to do so, partly to increase and improve our load, and partly to make sure that the conditions under which our service was used were all that they should be as to safety, efficiency and economy.

Today, many of our leading companies are going into the business of education—training their employees so that they will exercise an instinctive response to any demand on the part of a customer that will result in that customer completing his or her transaction with the company in a satisfied frame of mind, so far as that is reasonably possible. You gentlemen in charge of sales should be vitally interested in the splendid course of employee-customer training that has been inaugurated by the American Gas Association. I am happy to be able to say that our company in New York City is acting on the policy that every employee who has any regular dealings with the public—from sales managers to meter readers—should have this intensive training in the technique of making friends for the company. We have started out by taking a thousand enrollments, at $15 each, and there will be more to come next year. We have organized a special department to handle this activity, and I wish you could see the enthusiasm that is running through those men and women who meet together in groups under their own leaders every week.

Lots of interesting and amusing things crop up at those group meetings, where they talk about all sorts of matters relating to their daily problems. "How to stop a woman when she's talking!"—there's a problem in public relations for you! The best answer our men could give was the one that Adam probably finished up with—"Let her talk!"

All sorts of examples have been given illustrating this, that, or the other conception of what public relations in business really means. One clerk's idea was a snappy comeback, so when a prospective customer timidly asked him "do you keep refrigerators," he replied, quick as a flash, "No Madam, we sell them." Probably he kept that one anyhow!

And there is the classic advertisement of the Stackpole, Moore, Tryon Company in Hartford, Conn., at Asylum and Trumbull Streets. Possibly some of you know it. One night the store was robbed, suffering a loss of approximately twelve thousand dollars, much of it in merchandise. The next day the Hartford *Courant* carried this advertisement of the firm: "TO WHOM IT MAY CONCERN: We regret that the gentlemen who visited our store early Monday morning were not accorded our customarily courteous service. Insofar as the merchandise they selected bears the Stackpole label, we guarantee both quality and wear. Should any item prove unsatisfactory, we will cheerfully replace it . . . and ask no embarrassing questions."

And finally, plumber-dealer cooperation being such a live subject as it is today, we cannot overlook the advertisement of a plumbing concern, which might have been inspired by a gas company announcement. "We assure you, madam," it read, "our responsibility does not end with installing your bathtub. Our aim is to see that you get a thoroughly good bath."

You are doing an enviable job in the field of regional cooperative advertising. Your copy material is constantly increasing in effectiveness. At the same time, I hope your companies are taking full advantage of their opportunity—which exists no place else that I know of, outside of the Pacific Coast perhaps—of tying in your own sales and public relations activities in every possible way.

It must be true, as it always is in affairs of this kind, that here and there some of your people are beginning to question the value of the returns they are getting from this expenditure. It's only natural. It's human nature. It's hard to take anything on faith that we cannot see and handle, just as it is hard sometimes to convince your customers that they are really getting their money's worth in convenience and service when you render their gas bill.

I simply want to say that you do not know how fortunate you are—and I am speaking now both to appliance manufacturers and to gas company sales executives.

I wonder if this aspect of the matter has ever occurred to you: It is not of primary importance, but in my judgment it is worth enough in itself to justify your present appropriation.

The kind of advertising that you are doing on a large cooperative scale is making it possible to make your own individual efforts ten times—and a hundred times—more effective than they could be otherwise. If you will excuse my presumption for a moment, I wonder how many of you are taking advantage of this fact? One of the reasons why cooperative advertising was considered practicable in the first place was the fact that you all had a common interest—a common idea to sell, which, if you could sell it (and I ask you to name anything that advertising cannot sell, if the people can be made to want it), would be of almost equal advantage to all. Before that time, everyone had to do at least two jobs with one appropriation, as most of the rest of us are doing at the present time. Some companies, particularly gas companies, are trying to do three or four things: First you had to sell the idea of gas as an up-to-date fuel. You had to sell the value of the service. You had to inform your customers and the public with regard to matters affecting their use of the service. You had to sell the rate; and you had to sell your own responsibility as a public-spirited business undertaking. Last of all you had to sell an appliance. If you were a manufacturer, it was a particular brand of appliance. If you were a gas utility, your advertising was timed according to local conditions, to the stock on hand, or to some other factor of similar importance.

B. J. Mullaney, last year's president of the American Gas Association, once advised his advertising men in Chicago to "make every merchandising advertise-

*From an address given before the Gas Sales Division of the New England Gas Association, Boston, Mass., November 7, 1930.

ment serve to improve the public relations of the company, and to make every so-called 'good will' advertisement make it easier to sell gas and appliances."

Of course, this is ideal; but I want to ask if you have ever seen one of those advertisements like a three-ring circus which tries to cram everything into a little white space, because it will be a whole week before you will get another chance to advertise? Here is a paragraph about water heating service, and here is a picture of a water heater (maybe several, just to be impartial), and here is a picture of a pretty girl stepping into a bathtub; and down here is a line or two about the company's service, flanked by a coupon and a logotype or a name plate; and I have even seen where enough white space was left for a fly to light on, there was a tasteful little reminder about a customer-ownership campaign.

I know how it is. There is a small appropriation and a tremendous big job and a pious hope that "if we don't get 'em one way, we'll get 'em another." But deep down in our common sense we know all the while that, instead of doing one thing reasonably well, as we might have done, the net result is a big juicy zero.

Well, cooperative advertising is your answer. It accomplishes some of these jobs in which all of us have a common interest, and then with that taken care of, both the appliance people and the utilities can talk about the immediate problems of their customers.

Because that is where public relations comes into the appliance picture. There are all sorts of fine-sounding definitions of public relations, but they all come down to helping to solve the other fellow's problems in such a way that he will want to do business with you forever after.

In fact, good public relations are the one essential ingredient of your business in selling gas appliances. You cannot get along without them, and you cannot afford to let anybody else assume all the responsibility for them, either. Anybody can sell pots and pans, but it takes a far-seeing sales manager to sell gas service and the appliances that go with it. Good public relations are made, not endowed. No gas company ever came into the world with the silver spoon of good public relations in its mouth.

I am surprised sometimes that commercial men generally do not do more in applying the ordinary rules of public relations technique to our business.

The other day I came across an article by the director of public relations of a certain large power company. It was a thoughtful piece of work, and the author had succeeded in listing every single one of the company's activities he could think of that could be included in a practical public relations program. There they were—thirty public relations activities—Employee insurance, distribution of preferred stock, membership in the Red Cross, personal calls on newspaper editors, special service giving the correct time between certain hours, sponsorship of musical concerts on the radio. Thirty of them, and every one was typical of those I have just mentioned. Scarcely one was related even indirectly to the selling of service or appliances. The nearest was entitled "Home Service appliance demonstrations before women's clubs." The commercial manager did not even have his foot in the door!

Now that is only one side of the big subject of public relations, and I submit that it is by far the smaller side. It is when people do business with you, when they use what you have sold them, that the big opportunity for public relations gets in the picture.

It is their problems, not yours, that make good or bad public relations, and that help to sell appliances and gas service.

I remember one company which sent out a questionnaire to a group of customers who had been receiving the company's magazine or house organ. They wanted to know if those people wanted to continue receiving the advertising—a perfectly legitimate question. But then they spoiled everything by going into great detail explaining how much money and work it cost to send out that advertising every month, and they would stop it, by gosh! if the customers did not show some interest and appreciation.

A whole lot of gas company advertising and salesmanship is operated on such principles. As somebody said, "they seem to be trying to sell a ton of problems for a wagon load of sympathy."

But that is not the principal or only trouble. The real trouble lies in talking too much about what the appliance does—the operating details—instead of what the customer can do once he or she has the appliance installed.

I will admit, even the former method is a great improvement over the old way which talked so much about the principle on which the appliance was constructed that it was difficult for the purchaser to discover what, if anything, it was intended for. But now that we have gone part of the way in meeting the customer, why not take a leaf from the public relations textbook and meet him all the way?

You may think you are selling water heaters or ranges or furnaces, or even gas service—and this too used to be considered an advanced stage of salesmanship—"Gas, the ideal, ultimate, effortless fuel." But that is not the fact at all, when you are talking the language of public relations—the language of the man in the street and the woman in the home.

Believe it or not, what you are really selling is bridges—plain ordinary bridges, like those that carry you over the rivers and highways from the place where you are to the place where you want to be. That is what I mean by a bridge, and that is what Mr. and Mrs. Customer mean when you succeed in getting them interested in a gas appliance. They are looking for a bridge. When they reach your display room, or when your salesman reaches their home, they are already standing on the brink of the sream,—that is, if you are lucky. For one reason or another they are anxious to get over on the other side. On this side they see nothing but hard work and drudgery. Soot and ashes are all over the bank. Perhaps it is a little lonesome because many of their friends have already found the bridge to the other side, and they seem to be having such a good time about it. The other side looks comfortable, up-to-date, and there is plenty of time to do the things they have always wanted to do. But the stream is wide. They cannot jump it alone. The current is too strong to swim. Not a boat is in sight. Why does not someone build a bridge?

The bridge is there, but it is not always easy to recognize, because the gas man, whose job it is to send people over the bridge, has cluttered it up with toll gates, and disguised it so with machinery (which may look vital to him) that it might be a nonreversible, gear-toothed, centrifugal gadget, for all the customer knows.

Gas appliances are the bridges that make it possible for gas users to get over where the grass is green, and the sun shines all day long. They do not care much how the bridge operates—whether it shoots them over or carries them over—so long as they get there in time to do the things they want to do. If there is no compelling reason to make them want to get over, if they are perfectly satisfied with where they are and if you have not got enough imagination to dangle the delightful possibilities before their eyes, then you can build bridges from now until we all become prohibitionists before your bridges will suffer a heel print to mar the macadam.

Doherty Acquires Heating Co.

THE Surface Combustion Company, of Toledo, Ohio, Frank H. Adams, general manager, announced last month, has acquired the Gas Equipment Division, including Foundry of the Columbus Heating & Ventilating Co. of Columbus, Ohio, manufacturers of gas-fired warm air furnaces and unit heaters.

The Surface Combustion Company originally specialized in gas-fired designed industrial equipment and made great strides in the automotive, steel and other industries. In the last three years, it has carried on an extensive research and development program with respect to gas conversion burners for installation in boilers and warm air furnaces.

No Default

NO gas company bonds appear in the list of defalcations in the payments of interest of utility bonds since the World War, issued by Dow Jones & Co., November 25, 1930.

Industrial Gas Section

D. W. CHAPMAN, Chairman — C. W. BERGHORN, Secretary — A. J. PETERS, Vice-Chairman

Industrial Gas Bibliography

FOLLOWING is a supplementary list to the published Selected Bibliography of Industrial Gas Articles:

GENERAL DATA—A

Combustion Data—A-III

Steel ..... Mixed gases promote economy in steel making ..... Aug. 7, 1930, p. 54
(Combustion data mixed coke oven and blast furnace gases.)

Comparisons—A-IV

Heat Treating & Forging .... The economies of electric heating ..... July 1930, p. 908

Hospital Management .... Electric cooking proves advantageous at large mental hospital ..... July 1930, p. 29
(Electricity for cooking and baking replaces coal fuel.)

Heat Transfer—A-VII

Gas Journal (London) .. Heat transmission with particular reference to modern methods of expressing convection data ..... June 11, 1930, p. 729

Mechanical Engineering ... Heat transmission between fluids and solids: conduction and convection ..... July 1930, p. 690
(Individual coefficients of heat transfer between solids and fluids.)

Mechanical Engineering ... Transmission of heat through insulation ..... July 1930, p. 693
(Formulas and graphs for heat loss by radiation and convection from bare pipes, boiler walls and other surfaces met with in industry.)

Radiant heat transmission ..! July 1930, p. 699
(Radiation from clear gases, particles and solids.)

Wearing in Motors—A-XIII

Industrial Gas .. Gas makes the greyhounds leap ..... July 1930, p. 7
(Wearing in motors using city gas as fuel.)

Miscellaneous—A-XIV

American Gas Journal ..... Gas in the road building industry ..... Oct. 1930, p. 59
(Natural gas used in rotary kiln and under steam boiler.)

Industrial Gas .. Sustaining 2750° F. in a large reduction furnace ..... Sept. 1930, p. 26
(Reducing molybdenum ores. 530 B.t.u. C.W. gas.)

HEAT TREATMENT OF FERROUS METALS—B

Forging—B-I

Chemical & Metallurgical Engg. ..... Fabricating pressure vessels with forge welding ..... July 1930, p. 412
(Roll and hammer process.)

Fuels & Furnaces ..... Scaling of steel at forging temperatures ..... Oct. 1930, p. 1423
(Abstract of 1930 preprint A.S.S.T.)

Trans. of the A.S.S.T. .... Practical and theoretical heat balance for rotary forging furnaces ..... Aug. 1930, p. 250
(Comparison made for four fuels, oil, mfd. gas, nat. gas and butane.)

Nitriding—B-IIa

Heat Treating & Forging .... The development of continuous nitriding ..... Oct. 1930, p. 1277
(Higher ammonia dissociation than in batch process produces satisfactory work. Results show savings in time and in ammonia consumption.)

Iron Age ..... Recent developments in nitriding ..... Sept. 11, 1930, p. 680

Case Hardening—B-V

Fuels & Furnaces .... The carburization of steel in a gas atmosphere ..... Oct. 1930, p. 1375
(Abstract of 1930 A.S.S.T. preprint.)

Cyanide Hardening—B-VI

Steel ..... Hardening steel commercially by cyaniding process ..... July 17, 1930, p. 43
(Review of the process by a metallurgist.)

Lead Hardening—B-X

Iron Age ..... Gas for lead hardening of shovels ..... June 26, 1930, p. 1880
(Lead pot fired with gas used in regular production with electrically heated pot to take peak loads. Natural gas.)

Miscellaneous—B-XI

Iron Age ..... Heat treating motorcycle parts. July 24, 1930, p. 221
(Hardening and annealing. Mfd. gas.)

Metal Progress . Influence of furnace atmospheres on correct heat treatment ..... Oct. 1930, p. 60
(Scaling effects of gases.)

Natural Gas ... Heat treating spiral springs with natural gas ..... Oct. 1930, p. 32

HEAT TREATMENT OF NON-FERROUS METALS—C

Brass—C-II

American Gas Journal ..... Annealing with gas in a brass finishing plant ..... Aug. 1930, p. 37
(Uniform annealing, almost a bright finish. Mfd. gas.)

METAL MELTING—D

Brass and Bronze—D-I

Natural Gas ... How Westinghouse Air Brake Company melts brass ..... Oct. 1930, p. 33

Galvanizing—D-III

Iron Age.....Galvanizing furnace using both direct and indirect heating .....Sept.18,1930, p. 771
(Silicon carbide bricks protect pot, insure long life.)

Steel .....Zinc alloys destroy galvanizing pots.....July 10 & 24, 1930, p. 47 & 56

Miscellaneous—D-XII

Industrial Gas..Smelting with natural gas...Nov. 1930, p. 19
(Copper reverberatory. No preheat of gas or air.)

WHOLESALE BAKING—F

Bread—F-I

Food Industries. Electric baking from the economic side.....Sept. 1930, p. 396
(Consumption data.)

Miscellaneous—F-IV

Bakers Weekly. Comparative fuel costs for bake oven firing.....July 5,1930, p. 77

Gas Age-Record. Why not the baking load?..July 5,1930, p. 6
(Relative costs of competitive fuels.)

HOTELS AND RESTAURANTS—H

Hotel Management .....What one management has to say about cooking with gas. Oct. 1930, p. 170
(Factors stressed: average consumption of 5.70 cu.ft. mfd. gas per meal and speed in cooking.)

Pacific Coast Record .....Gas versus coal.....Sept. 1930
(Gas cooking and baking proves economical. Natural gas.)

LOW-TEMPERATURE BAKING AND DRYING—I

Core Baking—I-I

Western Gas...Change-over to gas spells economies for this gray iron foundry.....Nov. 1930, p. 36
(Test results. Mfd. gas.)

CERAMICS—J

Glass—J-I

American Gas Journal .....“See what you buy”—in glass made by gas.....Oct. 1930, p. 62
(Review of processes to which gas fuel is applied.)

Western Gas...Gas fuel in glass making....May 1930, p. 63
(Description of process and machinery used.)

Vitreous Enameling—J-III

Jl. of Amer. Ceramic Soc..Progress report on the effect of furnace gases on the quality of enamels.....Aug. 1930, p. 522

Ceramic Industry .....Then they got a continuous furnace .....Sept. 1930, p. 276
(Operating costs, batch type versus continuous type. Mfd. gas.)

Frit Smelting—J-IV

Jl. of Amer. Ceramic Soc..Design of enamel smelting furnace .....Sept. 1930, p. 655
(Open hearth smelter—air-cooled.)

Terra Cotta, Sewer Tile, Refractories—J-VI

Jl. of Amer. Ceramic Soc..Clay sewerpipe manufacture..Aug. 1930, p. 566
(Checking flue-gas analysis—calculations made for kilns fired by coal, fuel oil, natural gas.)

Miscellaneous—J-VII

Jl. of Amer. Ceramic Soc..Cost savings in continuous furnaces .....Sept. 1930, p. 662
(Continuous furnace replacing box-type because of savings in fuel, floor space, indirect savings in quality, production and cost control.)

Coast Counties Gas Employees Go to School

THE Coast Counties Gas and Electric Company is conducting a training school where employees are initiated into the mysteries of gas. This training school supplies the newly-formed subsidiaries of the Pacific Public Service Company with a trained personnel.

With the cooperation of J. B. Wilson, president of Coast Counties Gas and Electric Company, the management of the company has developed this scheme of preparing men for their future responsibilities in anticipation of the need for well-trained public utility employees.

These employees while in training with Coast Counties are known as cadets. Many of these cadets are men who have had experience in public utility operation elsewhere, but that of course does not exempt them from entering as a cadet to learn the ways of Coast Counties.

Regardless of the ultimate position to be filled by the cadet, he is first of all required to obtain a working knowledge of all phases of the gas business. If his qualifications, whether they be appearance, approach, etc., mark him as potential salesman timber and he indicates a preference for that calling, and the latter portion of his cadetship is devoted extensively to sales training. If, on the other hand, his tendencies are toward the operating or engineering phase of utility work, his training is accordingly directed.

The cadet spends several weeks in one of the company offices where he is instructed in the use of forms, preparation of reports, etc., and then he suddenly finds himself working along with the outside line or gas men, where he gains experience of a more hardy character, as it is necessary for him to learn to view the business from every angle.

He is taught proper methods of installing services, meters and regulators to the end that the consumer's appliances will operate most efficiently. He must also become familiar with the adjustment and repair of those appliances. He is also instructed in the proper manner of approach to the consumer's premises for the purpose of inspection, meter reading, etc., in the correct manner of presenting himself to the consumer and in matters of deportment, patience and service.

Three Gas Men Awarded Medals

THREE President's Medals were awarded at Lawrence, Mass., last month by the National Safety Council to three employees of the same gas company and in the same department, but for rescues on different occasions.

Fred H. Sargent, president of the Lawrence Gas and Electric Company, on behalf of the National Safety Council, presented Assistant Superintendent Albert L. Deggs, Fireman Daniel J. Donoghue and Power Station Operator Ernest A. McComiskey with bronze medals and certificates commemorating their acts of bravery in saving lives.

Mr. Deggs was awarded the medal for saving the life of Thomas Wilson, who was found dying after having been overcome by carbon monoxide gas. Mr. Donoghue's award was for participation in saving thirteen-year-old Margaret Martin from drowning at North Andover. Mr. McComiskey was credited with saving the life of Clifford Jackson, who was overcome by ammonia fumes from a refrigerating machine in the basement of a restaurant where he was employed.

The Lawrence Gas and Electric Company has had many of its employees honored for heroic life saving work but this is the first time in its eighty odd years of existence that three employees had the honors conferred simultaneously.

The Lawrence Gas and Electric Company, part of New England Power Association, is widely known because it is a compulsory requirement of employment that every employee, man or woman, must have a working knowledge of the prone pressure method of resuscitation.

Oklahoma Towns Grant Gas Franchises

TWO additional Oklahoma towns voted natural gas franchises during November, Verden, to the State Fuel Supply Company, and Coyle, to the Pact Gas Company. Buffalo was to have voted on granting a franchise to the Buffalo Public Service Company, but the election was postponed indefinitely. Gas franchises were scheduled to be voted on during December in favor of the State Fuel Supply Company at Binger, Hydro, Lookeba, Hinton, and Laverne.

Every House in Town Piped for Gas

A SURVEY of towns served by the Cimarron Utility Company, in Western Oklahoma, revealed that every house in Optima has been piped for natural gas.

Gas Appliance and Equipment Developments

New Gas Range Models

In January, The Independent Stove Company of Owosso, Michigan, makers of Renown products, introduced two new models in gas range design.

New Fluid Meter Bulletin

"Mechanically Operated Fluid Meters" is the title of a new bulletin being distributed by the Bailey Meter Company, Cleveland, Ohio. This bulletin describes and illustrates various types of mechanically operated meters and auxiliary equipment for their installation.

The Bailey company recently announced the opening of an office in Seattle, Washington, at 406 East 80th Street, under the management of L. E. Evans.

Temperature and Pressure Relief Valve

The Spencer Thermostat Company, Cambridge, Mass., is placing on the market a new, self-closing, relief valve that offers protection against both excessive pressure and excessive temperature.

The Carrier Weathermaker

The Carrier Weathermaker system for homes is the result of five years' research by Willis H. Carrier, president of the Carrier Engineering Corporation, Newark, N. J., and engineers associated with him, to adapt to residential use in winter the principles of manufactured weather which he and his associates first developed and applied to industry.

Automatic Gas Range

Time and temperature control on a gas range is being offered by the Geo. D. Roper Corporation, Rockford, Ill., manufacturers of Roper gas ranges.

Allen Moves

The Allen Manufacturing Company has moved its operations to a new plant at Franklin, Tennessee. This company manufactures gas-, coal- and wood-burning circulators and gas ranges.

Standard Flight Conveyor

A new standard flight conveyor with sectional truss boom, swivelling wheels, and finger-tip-control power boom hoist is announced to the coal trade by the Barber-Greene Co. of Aurora, Illinois. This new machine is designed for handling all sizes of coal and coke, and may also be used for handling dry clay and filter oxide. It has a capacity of a ton of coal a minute.

Contributions by manufacturers of gas appliances and equipment to this department will be welcomed by The A. G. A. Monthly. On account of space limitations, all announcements of new products, improvements, etc., should be limited to about 100 words. No attempt will be made to describe each product or give details of construction. For such details address the manufacturer direct. Where justified, photographs will be used to illustrate these brief items. All contributions to this department should be addressed to C. W. Berghorn, Secretary, Manufacturer's Section, American Gas Association, 420 Lexington Ave., New York, N. Y.

Enameling Plant

The Youngstown Pressed Steel Company, Warren, Ohio, has built and installed a complete new plant for the vitreous enameling of steel products.

New York Address

The Riverside Boiler Works, Inc., Cambridge, Massachusetts, manufacturers of hot water automatic storage systems with copper or Kopsteel galvanized boilers, announce that the office of their New York representative, Jno. C. Fullerton, Inc., is now at 11 West 42nd Street, New York.

A new market for the sale of domestic gas, either natural or artificial, is opened up by the use of gas in heating steam railway switches, for the melting of snow and ice. A new development has been announced by the Chausse Oil Burner Company, Elkhart, Indiana, in a gas switch heater with electrical ignition so that an entire yard equipment of heaters can be turned on and put into operation from a central point.

Producing New Heater

The Gas and Electric Heater Co., La Porte, Ind., direct subsidiary and utilities division of Bastian-Morley Co., has launched into the utility field with a heater which is the result of direct inquiry through a great number of gas company executives and merchandising managers.

Expand Research Facilities

Additions to the floor space, equipment and personnel of the Albany laboratory of the American Meter Company have been completed. The laboratory now occupies an area of 950 sq.ft. It specializes in experimental and testing work relative to low pressure measurement. Activities are coordinated with the company's research laboratory at Metric Metal Works, Erie, Pa.

Canadian Approval List

The Canadian Gas Association last month began the distribution of the fifth edition of its list of approved gas appliances. It contains more than fifty additional appliances above the previous list. Twenty representative manufacturers appear in the new issue and indications point to more being added in the early future.

Bulletin on Gate Valves

The Western Gas Construction Company, Fort Wayne, Ind., announces the release of a bulletin on "Western Gas Gate Valves."

Air Butane Development

(Continued from page 8)

tion of Oregon and Natural Gas Corporation of Washington to complete work in these communities as rapidly as time will permit.

A construction program has been carried out under the direction of Standard Management and Operating Corporation, recognized throughout the Pacific Coast for its construction work in the utility field.

Monthly Summary of Gas Company Statistics

FOR MONTH OF OCTOBER, 1930

Issued December, 1930, by the Statistical Department of the American Gas Association
420 Lexington Avenue, New York, N. Y.

PAUL RYAN, Statistician

COMPARATIVE STATISTICS OF 148 MANUFACTURED GAS COMPANIES FOR THE MONTH OF OCTOBER, 1930

	Month of October			*Ten Months Ending October 31*		
	1930	*1929*	*Per cent Increase*	*1930*	*1929*	*Per cent Increase*
Customers	8,946,961	8,903,028	0.5	*See October*		
Gas Sales (MCF)	29,358,915	29,750,892	— 1.3	294,763,036	294,033,958	0.2
Revenue (Dollars)	31,671,993	31,735,958	— 0.2	314,548,799	313,416,157	0.4
Gas Produced and Purchased (MCF)						
Gas Produced						
(a) Water Gas	15,564,395	15,977,561	— 2.6	147,802,951	155,387,268	— 4.9
(b) Retort Coal Gas	2,711,690	2,669,302	1.6	25,382,311	26,227,466	— 3.2
(c) Oil Gas	586,559	546,146	7.4	6,267,086	6,316,155	— 0.8
(d) Coke Oven Gas	4,237,976	3,989,010	6.2	40,516,682	38,466,517	5.3
(e) Reformed Oil Still Gas	284,045	141,991	—	1,626,795	283,672	—
(f) Total Gas Produced	23,384,665	23,324,010	0.3	221,595,825	226,681,078	— 2.2
Gas Purchased						
(a) Coke Oven Gas	9,549,763	9,758,261	— 2.1	92,865,092	88,456,948	5.0
(b) Oil Still and Natural Gas	297,470	259,801	14.5	2,340,205	2,453,680	— 4.6
(c) Total Gas Purchased	9,847,233	10,018,062	— 1.7	95,205,297	90,910,628	4.7
Total Gas Produced and Purchased	33,231,898	33,342,072	— 0.3	316,801,122	317,591,706	— 0.2

COMPARATIVE STATISTICS OF 140 NATURAL GAS COMPANIES FOR MONTH OF OCTOBER, 1930

Customers						
Domestic (Including House Heating)	3,990,986	3,949,826	1.0			
Commercial	169,447	171,239	— 1.0			
Industrial	13,671	13,700	— 0.2			
Main Line Industrial	3,545	2,794	26.9	*See October*		
Miscellaneous	2,261	1,511	—			
Total	4,179,910	4,139,070	1.0			
Gas Sales (MCF)						
Domestic (Including House Heating)	14,548,406	15,397,501	— 5.5	204,648,291	206,435,397	— 0.9
Commercial	1,920,028	1,938,713	— 1.0	24,648,992	24,078,509	2.4
Industrial	15,079,078	18,525,237	—18.6	152,229,656	162,906,137	— 6.5
Main Line Industrial	5,452,824	4,598,258	18.6	50,671,982	43,815,618	15.6
Miscellaneous	364,477	522,008	—	4,826,956	4,842,740	—
Total	37,364,813	40,981,717	— 8.8	437,091,877	442,078,401	— 1.1
Revenue (Dollars)						
Domestic (Including House Heating)	10,853,025	11,214,286	— 3.2	143,388,783	143,191,113	0.1
Commercial	1,060,644	1,112,992	— 4.7	13,681,999	13,634,349	0.3
Industrial	3,759,043	4,676,437	—19.6	39,558,571	43,982,674	—10.1
Main Line Industrial	741,434	600,291	23.5	7,365,442	6,189,612	19.0
Miscellaneous	74,253	118,731	—	1,147,757	1,253,535	—
Total	16,488,399	17,722,737	7.0	205,142,552	208,251,283	— 1.5
Gas Produced and Purchased (MCF)						
Natural Gas Produced	17,617,582	18,967,828	— 7.1	187,499,683	184,714,590	1.5
Natural Gas Purchased	49,750,242	49,857,410	— 0.2	533,513,782	506,491,379	5.3
Natural Gas Produced and Purchased	67,367,824	68,825,238	— 2.1	721,013,465	691,205,969	4.3
Manufactured Gas Produced and Purchased	1,568,182	3,288,940	—52.3	18,997,809	35,663,877	—46.7
Total Gas Produced and Purchased	68,936,006	72,114,178	— 4.4	740,011,274	726,869,846	1.8
Company Use and Sales to other Gas Companies	25,984,096	25,813,211	0.7	272,499,830	264,161,264	3.2
Net Available for Public Distribution	42,951,910	46,300,967	— 7.2	467,511,444	462,708,582	1.0

Gas Utility Revenues Aggregate $519,691,351 in First Ten Months

REVENUES of utility concerns engaged in the distribution of manufactured and natural gas aggregated $519,691,351 during the first ten months of 1930, according to reports to the Statistical Department of the American Gas Association from companies comprising nearly 90 per cent of the utility distribution of manufactured and natural gas.

The manufactured gas companies reported revenues of $314,548,799 for the ten month period, representing a slight gain over the $313,416,157 reported by these same concerns for the corresponding period of 1929. The revenues of the natural gas utilities reporting for the ten month period totaled $205,142,552, a drop of 1.5 per cent from the same interval of 1929.

For the month of October, 1930, sales of the manufactured gas companies aggregated 29,358,915,000 cu.ft., a drop of 1.3 per cent from October, 1929. For the ten months ending with October, however, sales totalled 294,763,036,000 cu.ft. representing a small increase over 1929.

Sales of natural gas reported for October totalled 37,364,813,000 cu.ft., a decline of nearly 9 per cent from the 1929 figures. For the ten months ending with October, natural gas sales were 437,091,877,000 cu.ft., against 442,078,401,000 cu.ft. during the initial ten months of 1929, a loss of only 1 per cent.

Domestic uses continued to exhibit the stability characteristic of this phase of the business, sales and revenues from domestic users aggregating about the same for the ten month period of both 1929 and 1930. Industrial sales of natural gas, however, declined by nearly 7 per cent, dropping from 162,906,137,000 cu.ft. to 152,229,656,000 cu.ft. during the first ten months of 1930.

In New England manufactured gas sales for the ten month period were up 3 per cent, despite a drop of some 8 per cent in sales of gas for industrial-commercial uses. The Middle Atlantic states, comprising New Jersey, New York and Pennsylvania, reported a gain of 2 per cent for the period, but in the East North Central States, embracing Illinois, Indiana, Michigan, Ohio and Wisconsin, manufactured gas sales were down nearly 3 per cent. The loss in this region resulted primarily from sharp curtailment in the use of gas for industrial-commercial purposes.

GROUP C—EAST NORTH CENTRAL STATES

(Illinois, Indiana, Michigan, Ohio and Wisconsin.)

(Data reported by 38 companies whose sales constitute 92% of the total sales of manufactured gas in the East North Central States.)

				See October		
Customers						
Domestic	2,479,584	2,480,716	— 0.5			
House Heating	13,758	12,241	12.4			
Industrial and Commercial	116,799	115,863	0.8			
Miscellaneous	553	443	—			
Total (37 companies which segregate)	2,610,694	2,609,263	0.1			
Grand Total (38 companies)	2,632,592	2,630,887	0.1			
Gas Sales (MCF)						
Domestic	6,938,258	7,031,762	— 1.3	66,375,224	66,732,383	— 0.5
House Heating	207,923	215,584	— 3.6	4,064,732	3,510,111	15.8
Industrial and Commercial	2,557,968	3,059,069	—16.4	27,364,920	30,234,098	— 9.5
Miscellaneous	15,090	14,027	—	130,979	141,115	—
Total (37 companies which segregate)	9,719,239	10,320,442	— 5.8	97,935,855	100,617,707	— 2.7
Grand Total (38 companies)	9,796,925	10,398,619	— 5.8	98,682,031	101,355,985	— 2.6
Revenue (Dollars)						
Domestic	7,381,025	7,444,907	— 0.9	70,660,407	70,815,297	— 0.2
House Heating	173,800	177,116	— 1.9	3,157,020	2,733,612	15.5
Industrial and Commercial	1,939,958	2,258,084	—14.1	20,708,980	22,331,269	— 7.3
Miscellaneous	12,219	11,452	—	112,721	121,535	—
Total (37 companies which segregate)	9,507,002	9,891,559	— 3.9	94,639,128	96,001,713	— 1.4
Grand Total (38 companies)	9,577,958	9,963,584	— 3.9	95,325,564	96,683,156	— 1.4
Gas Produced and Purchased (MCF)						
Gas Produced						
(a) Water Gas	3,552,710	3,665,515	— 3.1	32,528,170	37,715,931	—13.8
(b) Retort Coal Gas	954,617	1,044,652	— 8.6	9,174,284	10,092,232	— 9.1
(c) Coke Oven Gas	1,728,240	1,733,251	— 0.3	16,867,314	16,458,570	2.5
(d) Other Gas	2,678	1,297	—	17,832	16,050	—
(e) Total Gas Produced	6,238,245	6,444,715	— 0.2	58,587,600	64,282,783	— 8.9
Gas Purchased						
(a) Coke Oven Gas	4,537,888	4,904,237	— 7.5	46,331,437	44,233,345	4.7
(b) Natural Gas	121,483	83,034	46.3	871,584	767,032	13.6
(c) Total Gas Purchased	4,659,371	4,987,271	— 6.6	47,203,021	45,000,377	4.9
Total Gas Produced and Purchased	10.897.616	11,431,986	— 4.7	105.790.621	109,283,160	— 3.2

The 1930 A. G. A. Convention Reports

The following reports presented at the last annual Convention of the American Gas Association are available at Headquarters, 420 Lexington Avenue, New York, N. Y.:

Title	Authors	Price To Members	Price To Non-Members
ACCOUNTING SECTION			
Accounting Machine Development, Report of Subcommittee on...	Cliff	$ .30	$ .60
Consumers' Deposit Accounting and Customers' Accounting, Report of Subcommittee on...	Cliff	.15	.30
General Office Accounting, Report of Subcommittee on.....	Cooper	.30	.60
Insurance, Report of Committee on	Kendall	.40	.80
Merchandise Accounting, Report of Joint Committee on.....	Davidson	.20	.40
Office Personnel, Report of Committee on.....	Boyd	.30	.60
Payroll Accounting, Report of Subcommittee on.....	McLane	.15	.30
Relations with Customers, Report of Committee on.....	Prezzano	.30	.60
Stores Accounting, Report of Subcommittee on.....	Kramarsik	.15	.30
Training Shop Employees for Good Customer Relations....	Baker	.10	.20
Treasurer's Department Accounting, Report of Subcommittee on	Seinwerth	.15	.30
COMMERCIAL SECTION			
Architects' and Builders' Service Committee, Report of.....	Little	.10	.20
Domestic Laundry Equipment, Report of Committee on.....	McCoy	.10	.20
Home Service Committee, Report of	Soule	.15	.30
House Heating, Report of Committee on.....	Rosenkrans	.15	.30
House Heating Sales Policy and Plans, Report of Subcommittee on	Harvey	.10	.20
Incineration, Report of Committee on.....	Stotz	.10	.20
Refrigeration, Report of Committee on.....	Hallock	.20	.40
Salesmen's Compensation, Report of Committee on.....	Munroe	.10	.20
Trade and Dealer Cooperation, Report of Committee on....	Peters	Free	
Water Heating, Report of Committee on.....	Jenks	.20	.40
Window Display, Report of Committee on.....	Philp	.60	1.20
GENERAL			
Accident Prevention, Report of Committee on.....	Stilwell	.25	.50
Customer Ownership, Report of Committee on.....	Robnett	.10	.20
Education of Gas Company Employees, Report of Committee on	Rissberger	.15	.30
Rate Fundamentals, Report of Committee on.....	Daily	.10	.20
Rate Structure, Report of Committee on.....	Purcell	.25	.50

Title	Authors	Price To Members	Price To Non-Members
INDUSTRIAL GAS SECTION			
Competitive Fuels, Report of Committee on	Biemiller	.15	.30
Cycle Control for Heat Treating Furnaces	Crossman	.10	.20
Economic Position of Gas Fuel in the Corner Bakery.....	Gallagher	.10	.20
Gas as a Competitive Fuel for Large Scale Pottery Burning..	Taylor	.10	.20
Hotel and Restaurant Sales Promotion, Report of Committee on	Gallagher	.20	.40
Industrial Gas Sales Management	Muehlberg	.10	.20
Industrial Gas Section Committee, Report of.....		.20	.40
Industrial Sales and Service Problems Encountered in Changing from Manufactured to Natural Gas.....	Gumz	.15	.30
NATURAL GAS SECTION			
Leak Prevention on High Pressure Transmission Lines.....	Martin	.20	.40
Long Distance Transmission of Natural Gas	Hill Rhodes	.25	.50
Natural Gas in the United States	Hendee	.20	.40
PUBLICITY AND ADVERTISING SECTION			
Advertising's Relation to Gas Sales Promotion.....	Schauer	.15	.30
TECHNICAL SECTION			
Carbonization Committee			
Builders' Section, Report of....	Schlegel	.40	.80
Carbonization Committee, General Introductory Report of...	Denig		
Coke, Report of Subcommittee on	Lohr	.50	1.00
Disposal of Waste from Gas Plants, Report of Subcommittee on.....	Powell	.20	.40
Producer Gas, Report of Subcommittee on.....	Haug	.35	.70
Survey of Gas and Coke Making Properties of American Coals, Report of Subcommittee on..	Haug	.50	1.00
Test Code for Producer and Carbonizing Plants, Report of Subcommittee on.....	Pfluke	.40	.80
Chemical Committee			
Analysis and Tests, Report of Subcommittee on.....	Gonder	.20	.40
Analysis and Tests, Report of Subcommittee on—Appendix I	Gonder	.25	.50
Chemical Committee, General Introductory Report of.....	Burke	Free	

Title	Authors	Price To Members	Price To Non-Members
Dehydration Committee Report	Spindle	.30	.60
Distribution Committee			
Distribution Committee, General Introductory Report of.....	Braine	Free	
Distribution Design, Report of Subcommittee on.....	Goldsmith	.25	.50
Economics of Transmission of Gas, Report of Subcommittee on	Cooper	.60	1.20
Mechanical Excavating and Backfilling	Waldron	.10	.20
Meters, Report of Subcommittee on	Bettle	.30	.60
Pipe Coatings and Corrosion, Report of Subcommittee on.....	Crowell	.20	.30
Pipe Joints, Report of Subcommittee on.....	Hagerman	.30	.60
Economic and Engineering Survey of the Gas Industry Committee	Griswold	.10	.20
Cooperation with Oil Industry on Utilization of Petroleum Products, Report of Subcommittee on	Perry	.10	.20
Water Gas Committee			
Automatic Grates and Chargers, Report of Subcommittee on..	Eck	.20	.40
Bibliography—Oil Cracking for Gas Making, Utilities Research Commission	Schnerr	.30	.60
Builders' Section, Report of....	Steinwedell	.15	.30
Evaluation of Bituminous Coals for Water Gas Use, Report of Subcommittee on.....	Pettyjohn Garrison	.25	.50
Gas Conditioning	Shively	.10	.20
Humidity Control in Dry Purification, Report of Subcommittee on.....	Murphy	.10	.20
Improved Utilization of Gas Oils, Report of Subcommittee on..	Schnerr	.50	1.00
Low Cost Manufactured Gas....	Russell	.10	.20
Low Gravity Water Gas, Report of Subcommittee on.....	Stein	.10	.20
New Developments, Report of Subcommittee on.....	Drake	.10	.20
Peak Load Production Equipment, Report of Subcommittee on..	Pratt	.10	.20
Reforming of Refinery and Natural Gases, Report of Subcommittee on.....	Hall	.25	.50
Steam Decomposition in Water Gas Sets, Report of Subcommittee on	Byrne	.10	.20
Test Code for Water Gas Plants, Report of Subcommittee on..	Genay	.25	.50
Utilities Research Commission, Case No. 13 on Improved Oil Economy in Gas Manufacture, Progress Report on the.....	Schnerr	.50	1.00
Utilization of Liquefied Petroleum Gases, Report of Subcommittee on.....	Duesler	.30	.60
Miscellaneous			
Humidity Effects in the Iron Oxide Process for the Removal of Hydrogen Sulphide from Gas	Huff & Milbourne	.20	.40
Natural Gas—A Summary of Available Data Relating to Supply & Demand.....	Swanson	.30	.60
Physics of Coal Carbonization..	Burke Schuman Parry	.30	.60
Substitution of Natural Gas for Manufactured Gas in Public Utility Operations.....	Wehrle	.25	.50
The Use of Heavy Fuel Oil in the Manufacture of Carburetted Water Gas	Dashiell	.15	.30

A. G. A. Again Receives Power Show Certificate

(Continued from page 7)

ing japan. Numerous products from factories where these ovens are in operation were exhibited, showing the type of work that can be done.

Alexander Milbourne Company, Baltimore, Maryland, used a small booth to show their line of gas cutting torches and some specimens of steel bars that had been cut with gas.

C. M. Kemp Manufacturing Company, Baltimore, Maryland, exhibited one of their small machines connected to the various types of burners which they manufacture. An immersion heating element for soft metal melting was also on display.

Ryan, Scully and Company, Philadelphia, Pennsylvania, showed a control valve and a non-shrinking, nonstretching link belt for use as a furnace conveyor.

Selas Company, Philadelphia, Pennsylvania, exhibited two of their machines, various burners, and gas-fired soldering irons.

Maxon Premix Burner Company, Muncie, Indiana, had in their booth a display table showing an air heater, several sizes of high-pressure burners, and a Premix machine with automatic temperature control.

About 400 sq.ft. of space was occupied by the A. G. A. Metallurgical and Research Laboratory. The equipment exhibited was assembled by R. G. Guthrie and J. A. Comstock of the Peoples Gas Light and Coke Company, Chicago. W. E. Jominy of the University of Michigan took charge of this booth at the show and spent considerable time promoting the use of gas from the metallurgical side. Some of the instruments exhibited in this laboratory had not been shown in this country previous to this show.

A. G. A. Headquarters New Phone Number

As of December 16, 1930, the telephone number of American Gas Association Headquarters, 420 Lexington Avenue, New York, N. Y., is now MOHAWK 4-4025.

Associations Affiliated with A. G. A.

Canadian Gas Association
Pres.—A. T. Leavitt, Hamilton By-Product Coke Ovens, Ltd., Hamilton, Ont.
Sec.-Tr.—G. W. Allen, 21 Astley Avenue, Toronto.

Empire State Gas and Electric Association
Pres.—William J. Welsh, New York & Richmond Gas Co., Staten Island, New York.
Chairman Gas Section—M. F. Clement, Rockland Light & Power Co., Middletown, Ind.
Sec.—C. H. B. Chapin, Grand Central Terminal, New York, N. Y.

Illinois Gas Association
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Sec.-Tr.—George Schwaner, 305 Illinois Mine Workers Bldg., Springfield, Ill.

Indiana Gas Association
Pres.—T. L. Kemp, Indiana Consumers Gas & By-Product Co., Terre Haute, Ind.
Sec.-Tr.—P. A. McLeod, Northern Indiana Power Co., Huntington, Ind.

Michigan Gas Association
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Sec.-Tr.—F. D. Beardslee, 315 N. 12th St., St. Louis, Mo.
Asst. Sec.—Jesse Blythe, 103 West High St., Jefferson City, Mo.

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Exec. Sec.—C. D. Williams, 41 Mount Vernon St., Boston, Mass.
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Secretary Operating Division—Paul Buchanan, Hartford Gas Co., Hartford, Conn.
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Sec.-Tr. Sales Div.—A. M. Slattery, Hoffman Heater Co., Boston, Mass.
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Pres.—Knox Lee, Southwestern Gas & Electric Co., Marshall, Texas.
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Sec.—E. N. Willis, c/o University Club, Dallas, Texas.

The Public Utilities Association of Virginia
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Sec.—C. O. Roberson, P. O. Box 537, Roanoke, Va.

Wisconsin Utilities Association
Pres.—M. H. Frank, Wisconsin Power & Light Co., Madison, Wis.
Exec. Sec.—J. N. Cadby, 135 West Wells St., Milwaukee, Wis.

Thirteenth Annual Convention of the American Gas Association
Atlantic City, N. J. - - - October 12-16, 1931

Employment Bureau

SERVICES REQUIRED

Manager for small gas property in the Southeast owned by holding company. State experience, references, and salary desired. **0177.**

Practical experienced industrial gas equipment **salesman** for established line of burners, and special equipment. Headquarters, New York City. Write fully as to experience, etc. **0180.**

Experienced, honest-to-goodness, hard-hitting **gas range salesmen** for Metropolitan New York, New Jersey and the New England Territory. **0183.**

Experienced **industrial** and **house heating salesmen** for Southern location in natural gas territory; salary and commission basis. **0187.**

Large utility in the South wants **Industrial gas salesman** with experience in power and large heating boiler applications. **0188.**

Working superintendent experienced in production and distribution of coal gas; give age, references, salary wanted and when available. **0189.**

Industrial gas **salesman,** experienced and qualified on house heating work and application of gas heating to all forms of manufacturing. Salary in the neighborhood of $3,000 per year, location central East. **0190.**

Gas Superintendent, experienced in water gas manufacture to have charge of manufacture and distribution; plant manufacturing one and one-half million per day; must understand manufacture and high- and low-pressure distribution thoroughly and be a general all around gas man capable of meeting the public as well. Salary to start $3,600 per year. **0191.**

Gas Engineer thoroughly grounded in coal and water gas operating, capable of designing coal and water gas plants up to two million cubic feet per day; familiar with high- and low-pressure distribution and with some knowledge of natural gas. Will be employed in the Engineering Department of a large utility under a Chief Engineer, and associated with a large group of electrical, mechanical, and civil engineers. Salary to start $3,600 per year. **0192.**

Well qualified **Division Manager** to have complete operating responsibility in a number of properties, preferably with knowledge of both natural and manufactured gas. **0194.**

Manager for rapidly expanding territory with experience in manufactured or natural gas. **0195.**

Experienced **natural gas** man from the practical field end, preferably with some experience as geologist, for well examination, lease and title work, as well as estimates and predictions as to various field possibilities. Salary $5,000 and up according to qualifications and experience. **0197.**

Young **college graduate,** preferably engineering, bright and energetic, with a good record, particularly in physics and mathematics, for gas measurement department. Salary to start $175 and up, according to ability, with expectation of promotion to charge of Department. **0198.**

"All around gas man" experienced in operating coal or water gas plants as well as distribution work, with real knowledge of domestic and industrial appliance sales, accustomed to earning $5,000 to $6,000; for South America therefore should know a Latin language. **0199.**

Young **graduate** in physics, of recognized university, with considerable training in sound and acoustics for research work. Salary to start about $150 per month. **0200.**

Superintendent competent to operate an oil gas plant (for Mexico). Send full details of training and experience. Knowledge of Latin language desirable but not necessarily essential. **0201.**

SERVICES OFFERED

Assistant to Operating Engineer or General Manager; experience in construction, manufacture and distribution; aggressive and ambitious; obtains results. **369.**

Manager or superintendent with twenty-three years' experience in all branches of manufactured gas industry seeks position in production, construction or distribution. Has managed several small properties. **370.**

District Manager of a medium size property. Technical graduate, nine years' experience in all branches of gas industry. At present employed as Manager. **371.**

Executive with twenty years' experience in all phases of the gas and electric industry, seeking a connection where his managerial ability can be employed. Has held important and responsible positions. Good organizer with a record as an economical operator. Particularly successful in improving customer relations. **372.**

PERSONNEL SERVICE

The attention of company executives is invited to the Personnel Service A. G. A. Headquarters is prepared to render by means of (1) the advertisements under *Services Required* or *Services Offered,* and (2) personal records carefully classified for convenient inspection.

Mail copy for receipt by the seventh of the month to insure insertion in the next issue.

Natural gas company **executive** (42) having had twenty-five years' experience in all branches of the industry. At present employed with large gas utility. **373.**

Manager of gas company or industrial fuel sales-mechanical-engineer. Experience covers successful national connection, plant design, construction, operation, business administration, fuel sales and engineering, in the gas industry nationally. Thoroughly capable of taking charge of a responsible situation from both an executive and engineering standpoint, particularly with a large holding company. **374.**

Engineer (33) with fourteen years' experience in gas property appraisals and inventories, rate work, new business and extension projects, statistical and cost work, together with general civil engineering in connection with natural gas property operations. Favorably employed at present, as a department head, but desires a change of location preferably to Ohio or the Middle West. **375.**

Industrial gas **sales engineer,** college graduate, experienced in marketing natural gas, to refineries, glass companies, paint companies, ceramic, power and ice plants, salt companies and heat treating plants. Familiar with design and construction of metering, regulating and burning equipment for industrial application. **376.**

Manager-Superintendent. Twelve years' experience as superintendent of water gas production and general manager; experienced in safety supervision and public relations work; desires position requiring some or all of above experience; age 35; married; technical graduate; prefer southern location; will consider foreign assignment. **377.**

Executive with public utility experience qualified to specialize on rate analysis, electric or gas, desires engagement. **378.**

Manager of gas properties. Twenty years' experience in all phases of the gas industry; comprehensive knowledge of manufacturing, transmission and distribution, with engineering, designing and construction of properties. Good at gaining and holding proper public relations, getting new business and in merchandising. **379.**

Gas engineer, specializing principally in distribution and service improvement, is open for either temporary or permanent position. **380.**

Graduate **engineer**—experienced in design, construction and operation of transmission lines, medium- and low-pressure distribution plants, in both manufactured and natural gas; desires position with operating or engineering company. **381.**

Engineer, design or sales. Experience carbonizing plant, auxiliary equipment, structural and general engineering. Good organizer and leader. Accurate estimator. Desires similar work or position where organizing ability would be useful. **382.**

Manager and engineer, technically sound, well educated with unusually varied experience of twenty years, thorough understanding of economics of different processes including Reforming of Natural Gas and Oil Gas, By-Product Utilization, Raw Materials and Unit Costs. Accustomed to planning and carrying out improvements, high- and low-pressure distribution layout. **383.**

Gas engineer, M.E. degree. Many years' experience in construction and operation; engineer of production and engineer of distribution of large companies, water gas, coal gas; sale of by-products, appraisals; estimates, budgets, designing, and natural gas conversion. **384.**

Gas engineer (33) M.E., experienced in operation, maintenance, and construction of gas plants, water gas, coal gas, Koppers ovens, and producers. General business experience and accounting. **385.**

Combustion engineer (M.S.) long training and experience with industrial gas applications. Familiar with natural and the various manufactured gases and their practical ratings. Expert advisor on industrial gas sales organizations. Can organize and direct fuel economics for large industrial consumers. Recognized authority on Combustion. Able to promote and direct practical testing and development to extend the use of gas in new fields of application. **386.**

Experienced industrial gas **sales engineer** with excellent sales, technical and educational background, desires position as executive with utility or manufacturer where seasoned personality, initiative, and ability to handle men will be appreciated. **387.**

Manufacturer's representative, New York territory, gas water heaters, space heaters or similar lines wanted. **388.**

Gas engineer, superintendent or assistant general manager (45) holding a technical degree, member A.S.C.E., familiar with all phases of the gas industry, including the public and the rate problem, is open for engagement. Applicant is willing to go anywhere his training and experience can be of use. **389.**

Factory representative with manufacturer of gas burning equipment. Ten years' experience in appointing dealers developing territory, etc.; five years' experience in the oil burning industry. Salary and expenses, or commission basis with drawing account. **390.**

Sales Manager or industrial gas engineer for Latin American property. Specialist in commercial and industrial installations, refrigeration, large water heating, large volume cooking. Speaks English and Spanish fluently. Fifteen years' managing personnel of various nationalities. **391.**

Fuel engineer (M.S.) eight years' experience in industrial field, familiar with any kind of fuel and its application, desires position as manager of Industrial Department or responsible position with equipment manufacturer. Good organizer with strong background of diversified industrial research. Married and now employed. **392.**

Manager-Superintendent, experienced in construction and operation of coal gas, water gas, and coke-oven plants. Also familiar with distribution problems. Employed at present by holding company as Assistant District Manager. Graduate engineer with background of practical experience. Best of references. **393.**

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